The United States MILLER

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The New Milwaukee Chamber of Commerce Building.

The engraving on this page will convey a tolerably correct impression of the style and character of the new Chamber of Commerce building, now approaching completion, on the southwest corner of Broadway and Michigan street, Milwaukee. It is expected that the building will be fully completed and ready for occupancy by November 1. It was erected by the Hon. Alexander Mitchell for the Chamber of Commerce, under a twenty years' lease, and in all probability will be the permanent abode of the Asssociation. The following is a description of the building:

The style of architecture is what may be termed modern conventional Italian. The treatment of the design is simple, avoiding excessive ornamentation, the effect being given by the bold handling of the parts and the substantiality of material and thoroughness of structure detail. The material selected is gray Ohio sand-stone. The building rests on a massive granite base, and is four stories above the basement, corresponding in height with the Mitchell Block, with which it will be connnected by covered passages extending across the alley. In plan it is a parallelogram of 120 feet feet on Michigan street by 100 on Broadway. The principal facade will be on Michigan street, the feature of which is the central entrance and a campanile arising to a height of 160 feet from the pavement.

The grand entrance, which is twenty-five feet wide and thirty feet high, is flanked on either side by massive granite pillars, highly-finished, resting on plinths of the same material; the pillars, finished at the top with richly carved capitals introducing heads with wings emblematical of commerce, support an entablature of graceful proportions, crowning which is a figure of "Commerce" of heroic size. In spandrils of entrance arch, on either side, are carved from the stone a locomotive with cars, and shipping, with an elevator in the distance, of artistic design and execution. A short distance above the entablature, are clearly cut heads of a "bull" and "bear" intently watching each other, as they are usually represented in commercial life.

The entrance steps are granite, and the side walls are lined with stone. The principal enrichments of the building are grouped about the entrance, and are in the way of carved capitals and ornamental string course of cornice, date, panel, etc. Beyond this it will be observed that the building is plainly and boldly treated in all its parts.

In the centre of the tower over the main entrance, is a tablet eight by sixteen feet, bearing the designation "Chamber of Commerce," in raised letters. At the height of 125 feet from the ground four illuminated clock dials appear, the works of which are the same as those used within the Chamber, giving the correct city time within and without. They can be seen from all parts of the city, The general height of the building agrees substantially with the Mitchell block, the tower alone rising to a greater altitude.

The roofs will be of slate, finished with galvanized iron cornices and iron railings of appropriate designs. The sky lines of the building will be broken by the massive campanile, rising boldly from the Michigan street front, bulit of stone, the upper part of which will be enlivened with large arched openings and balconies, affording fine views of the city in all directions; by the dormers and by the raised roofs and finish of centre and corner

CHAMBER OF COMMERCE, MILWAUKEE.

pavilions, all of which are designed with a view of giving a consistent degree of light, shade and variety to the whole composition.

As compared with similar structures in other cities, New York, St. Louis, Cincinnati, Chicago and elsewhere, although not so expensive, it is the best fitted for the purposes for which it is designed. The Corn Exchange, New York, is a brick structure, unpretentious and without special architectural character. The St. Louis building, costing nearly two millions, is of classic design, of great elegance, but is mostly devoted to other than the uses of the Chamber, the exchange room being on the third floor. The same is true of the Chicago Chamber. But in this city the building will be a Chamber of Commerce more than in name; its convenience and requirements first, private uses afterwards.

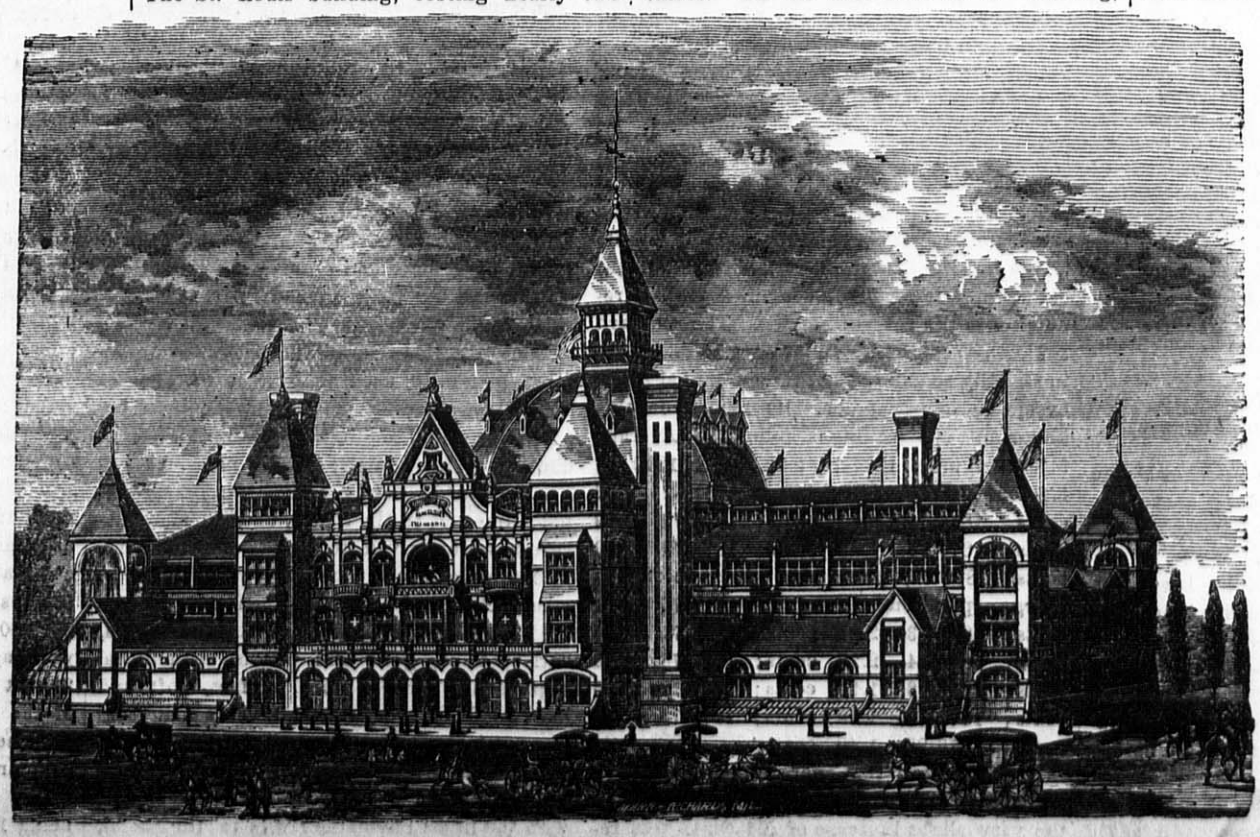
The basement of the building is twelve feet high, and will be cut up into commodious offices. On the first floor of the building, twelve feet from the sidewalk, is located the exchange room or chamber, which extends 115 feet from east to west, and 60 feet from north to south, with an embrasure on the south for the President's desk, etc., of 60 by 20 feet. The Secretary's office, Directors' rooms, etc., occupy the west end of the building. The exchange room is three stories, or forty-five feet high. The upper portion of the room is broken by arches, cornice and cove finish, to help the sound and carry out the constructive and architectural features of the design. Scogliola columns and pilasters richly finished with ornamental pedestals and carved capitals of appropriate designs, support entablatures from which spring the arches and ornamental cove finish. The visitors' gallery occupies the west end of exchange hall, over the Directors' room and offices, and is fifteen feet from the floor. In the center of the hall will be a skylight of colored glass not only for lighting but to assist in summer ventilation. There will also be a skylight of smaller dimensions over the enclosure, thus insuring an abundance of light in every part of the room. The arch over the President's desk is filled with colored glass with allegorical designs suitable to the purposes of the room, and the ceiling and side walls are handsomely decorated in color. The entrance from Michigan street is by an ample stairway, through a corridor twenty-four feet wide and of the same height, the doorway of the exchange room being directly opposite, forty feet from the street and in full view. The exchange hall is separated from a tier of offices on the Michigan street front by a fourteen foot hall extending east and west and running the whole height of the building.

On either side the main entrance on each floor will be four elegant commercial offices with fire-proof vaults, etc. On the right hand side of the entrance will be a commodious passenger elevator running from the top to the bottom of the building.

E. Townsend Mix was architect of the building, as also of the magnificent adjoining edifice. In point of architectural beauty it would be difficult to decide in which he has achieved the greatest success. The drawings and details were under the immediate supervision of Mr. Mix's chief assistant, Mr. W. A. Holbrook. The stone work was done by Mr. John Roberts, who was also the builder of the Mitchell building.

The Milwaukee Exposition Building.

We take pleasure in presenting on this page to our readers a handsome engraving of the Milwaukee Exposition building which is about to be built. The plans have already been made and accepted and as soon as the specifications can be made out in detail the work will be advertised and contract let as soon as possible. It is expected that the building will be completed by August or September 1881. Its cost will be not less than $200,000.



EXPOSITION BUILDING, MILWAUKEE.

The ground floor to occupy the square bounded by Fifth, Sixth, State and Cedar streets in the Second ward and, is to be architecturally of the Queen Anne style, an effective combination of the gothic and renaissance. It will be two stories high of Milwaukee brick and Ohio pressed brick resting upon a substantial foundation of piling and masonry. With its symmetrical central dome and flanking spires it will ever remain a monument to the architectual genius, the energy and the unsurpassed business prosperity of the representative Milwaukeeans in whose con-

Continued on page .

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MILWAUKEE, SEPTEMBER, 1880.

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We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. We are working our best for the milling interest of this country, and we think it no more than fair that our milling friends should help the cause along by liberal subscriptions. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

MILLERS' DIRECTORY FOR 1880.

All mill-furnishers, flour brokers or other parties desiring to reach the flour mill owners and millwrights of the United States and Canada, should have a copy of the above named work. It contains about 15,600 names with Post-office addresses, and in many cases (notably in Wisconsin and Minnesota) gives the number of runs of stone, sets of rollers, and kind of power used, or the capacity in barrels. A limited number of copies only have been printed. Upwards of 75 of the leading mill-furnishing houses and flour brokers in this country and several in Europe have already secured copies. Send in your orders at once. Price Ten Dollars, on receipt of which Directory will be forwarded post-paid by mail, registered. Address

UNITED STATES MILLER,
MILWAUKEE, WIS.

ISAAC GORDON'S steam grist mill at Dodge Centre, Minn., was destroyed by a cyclone, Aug. 27.

THE remains of Thomas Miller have been found in the ruins of the Thomas flour mill recently burned in Philadelphia.

MESSRS. SMITH BROS., of 454 Canal street, Milwaukee, millwrights and general mill builders and furnishers, report that they are having a very busy season.

If you are not already a subscriber to the UNITED STATES MILLER, *send one dollar at once and begin with our May number, which commences the fifth volume.*

The Miller (London) correspondent, in a recent letter to that paper makes favorable mention of the Jos. Schlitz Brewery and of Messrs. Voechting, Shape & Co's great bottling works, in Milwaukee.

WE call the attention of our readers to the advertisements of millstones and a cockle machine for sale. We can assure parties desiring to purchase that they can make a good bargain. Investigate at once.

MILWAUKEE unquestionally is as desirable a location for large flouring mills as can be found. That many business men believe it, is indicated by the many schemes now being discussed contemplating the erection of flour mills in this city during the next year.

The Chicago & North-Western.

The annual report of this company, for the year ending May 31, 1880, which has recently been published, affords substantial evidences of prosperity which are peculiarly gratifying on account of the magnitude of its operations, the vigor with which it is creating new extentions, and the numerous difficulties it has encountered and overcome. The Chicago & North-Western system is one of the largest in this country. It extends to or through six states and one territory, embracing Illinois, Wisconsin, Michigan, Iowa, Minnesota, Nebraska and Dakota. More than twenty-five hundred miles are operated, nearly all of which are, directly or indirectly, owned, and new extensions are being acquired or constructed with unusual rapidity. Independent of numerous branches one main line extends westward from Chicago to Omaha; another leads northwards from Chicago to Marquette; and another extending in a north-western direction from Chicago to St. Paul, has a branch stretching through the whole length of southern Minnesota to south-eastern Dakota, which will presumably soon reach the Black Hills mining region. The rapidity with which this system has been growing is shown by the following statement of the number of miles operated heretofore, in various years: 1871-2, 1,215.64 miles; 1872-1873, 1,705.64 miles; 1873-74, 1,923.08 miles; 1874-75, 1,990.33 miles; 1875-76, 1,992.08 miles; 1876-77, 1,992.68 miles; 1877-78, 2,036.98 miles; 1878-79, 2,154.03 miles; 1879-80, 2,512.77 miles. The Dakota extension is now progressing rapidly. The portion of it located in Dakota is to be called the Dakota Central.

As the main products of most of the regions traversed are agricultural, the prosperity of the company depends largely upon the success of the operations of western and north-western farmers, and the rapidity with which mileage has been increasing, during the last few years, affords another evidence of the growth of new settlements and of increased production of breadstuffs and provisions. The quantities of freight moved and tonnage mileage have recently increased much more rapidly than the length of the lines operated. The increase of traffic during the last year was specially noticeable, as the number of tons carried in 1878-79 was 4,265,937, and in 1879-80, 5,574,635, while the tonnage mileage in the former year was 681,878,311, and in the latter 865,909,542.

The gain in gross and net earning was very large. The gross earnings increased from $14,580,921.39 in 1878-79 to $17,349,349.04 in 1879-80, and there was a simultaneous increase of net earnings from $6,873,272.26 to $8,917,749.22. As usual in nearly all important American railway operations, the average rates were decreased, and the gain in profits is due to a very large increase in the amount of business transacted, combined with a reduction in the cost of service. The Chicago & North-Western has followed general usage in steadily reducing the average annual rates, except in one instance. Its record on this important subject is as follows: Average fares per mile, 1871-72, 3.28 cents; 1872-73, 3.16 cents; 1873-74, 3.14 cents; 1874-75, 3.02 cents; 1875-76, 2.85 cents; 1876-77, 2.89 cents; 1877-78, 2.83 cents; 1878-79, 2.79 cents; 1879-80, 2.67 cents. Average freight charges per ton per mile: 1871-72, 2.61 cents; 1872-73, 2.35 cents; 1873-74, 2.35 cents; 1873-74, 2.22 cents; 1874-75, 2.10 cents; 1875-76, 1.95 cents; 1876-77, 1.86 cents; 1877-78, 1.73 cents; 1878-79, 1.56 cents; 1879-80, 1.49 cents.

It will be seen that average fares have been reduced in every year except 1876–77, when the very slight increase of .04 cents was reported, and that freight charges have invariably been reduced every year to such an extent that in 1879–80 they were but a little more than half the sum charged in 1871–72.

We published, in our issue of July 10th, 1880, a translation of an interesting French comparison of the rates on the railway lines of different countries. Its author selected the Chicago and North-Western as a typical American line, and gave the average charges of that company at 2.82 cents per mile for fares and 1.69 cents per ton per mile for transporting freight. It will be seen that since the date of this calculation the passenger fares have been reduced to 2.67 cents and the freight rates to 1.49 cents per ton per mile. Although the latter sum is much larger than the average rates reported by the leading trunk lines, it is slightly lower than the cheapest rates reported by any European line.—*Railway World, Phil.*

Income of W. H. Vanderbilt—What He Could do With It.

It is computed that Mr. Wm. H. Vanderbilt's income from his investment in fifty-one million four per cent. government bonds pays him a daily income of five thousand dollars. This nets him two hundred and eight dollars and thirty-three cents per hour, or three dollars and forty-seven cents per minute, or five cents per second, without counting fractions. Assuming that he is paid by the second, he cannot possibly spend his money, as he could not select his purchases and lay down the pieces fast enough. He couldn't even throw it away—to pick up, cast, recover, pick up and cast again, would take him two seconds, and if he worked throughout the twenty-four hours without rest he could only dispose of one-half his income. If it were his design to scatter it in such a way, he would have to buy a machine operated by steam. This would involve the employment of a firemen, an engineer and two feeders, and, as the machine must work day and night to accomplish the task, three reliefs, or twelve men, would be necessary. As none but skilled workmen could do such work, the daily expense for hire would be three dollars each, or thirty-six dollars per day. To pay these hands it would only be necessary to stop the machine a fraction over ten minutes per day, just long enough to pay off, and enough money would accumulate.

There is a possibility that Mr. Vanderbilt does not intend to throw his mouey away by steam, and it might be worth while to look into various ways in which he might amuse himself with it. By living economically, saving up for four years, he could, by placing his five-cent pieces side by side, make a nickel belt around the earth; or, by converting his savings into one-cent pieces, and mounting them in a pile, he would, in twenty years, erect a road to the moon, and have five hundred dollars to invest when he got there. Should his amusement take a charitable twist, he could, out of a year's receipts, donate to every man, woman and child in the United States, twenty cents, and have money left over. In one day he could (if he could get around) go to eight thousand different circuses, eat ten thousand pints of peanuts, drink five thousand glasses of lemonade, and have money left to get his boots blacked. He can afford to have five hundred thousand shirts washed in one day, and on the day of his death his income will buy ten first-class funerals. It must be clear that Mr. Vanderbilt is making money, for while we were making these computations he took in one hundred and four dollars and ten cents.—*Appleton's Railway Guide.*

An Englishman's Views on American Machinery.

In a lecture recently delivered in Sheffield, Eng., Mr. W. K. Marples, of that town, related his experience and observation in his travels through the United States.

"I found," said the lecturer, "in visiting various American factories, machinery much more generally used than it is with us—in fact, I sometimes saw machinery employed for a process which might have been done more cheaply by hand labor; but we must remember that until recently skilled workmen were not numerous in the States, and so manufacturers were driven to the use of machinery. The Americans are much more advanced in manufactures of all kinds than many of us are aware. Cabinet furniture, glass and china, cutlery tools, guns and pistols, agricultural implements, carpets, linen, in fact, soft and hard goods of every description are made, and in most instances made well in the United States. Their resources are wonderful; nature has given them coal, iron, waterpower, etc., with the finest navigable rivers in the world, and then their chiefly English origin has given them pluck, endurance and preseverance under difficulties, and these qualities, coupled with the emmigration of many of our best artisans, have in the comparatively short space of 100 years worked marvels for them. The New England States are one vast hive of manufacturing industry, and it is here that the brains of inventors are stimulated to their utmost powers in developing labor-saving articles, and the machinery to make them.

"I think the introduction of the many American ideas and inventions in England that has been attempted during the past few years will tend to develop new ideas among our workpeople, and assist us in holding our position as the great manufacturing nation of the world. I have little fear that English hardware manufactures will succeed in holding their own in all markets where the duties are not prohibitory, as in the United States. There is little doubt much of the boasted superiority of American manufacturers in the matter of price was a mere myth, and I am fully convinced that until a few months ago, when the hardware trade in America was so depressed, the manufacturers there exported goods to England at a positive loss. In some cases this has been admitted, and the enormous advances, amounting in some goods (notably in locks) to over 100 per cent, bear me out in this opinion. Many goods that up to a short time ago were imported from America, are now manufactured in England, and the Americans would seem to be doing their best to destroy the trade which until recently they were apparently so anxious to build up. English manufacturers have been fully alive to the situation, and will not readily allow American manufacturers to recover the ground they are now losing."

The Roller Patents in the British Courts.

The appealed suit of Wegmann vs. Corcoran, Witt & Co., for infringement sf the patent in porcelain rollers, was heard at the Court of Appeals, Lincoln's Inn, London, before Lords Justices James, Baggallay and Thesiger on June 21, 23, 27 and 30. This was an appea from the decision given by Justice Fry, on Dec. 9, 1878, that the patent granted to Mr. Wegman was invalid, owing to the incompleteness of the specifications, and therefore that Messrs. Corcoran, Witt & Co. did not infringe. In hearing the appealed case the same evidence as was presented in the first suit, was gone over, a summary of which appeared in our February issue. In referring to the former case Mr. Aston, attorney for Mr. Wegmann, said: "The unfortunate part of the case is that at the hearing none of us were alive to the idea that specification would be read in any other way, or that it would be suggested that the coating was other than a shell or jacket. I submit, my Lords, that there are three questions which must be answered in the affirmative. First—I say that the specification shows that the iron roller is to have a cylindrical jacket; secondly—A person would know that the shell was to be made of hard materials; like china, for the jacket is to be tough and tenacious, and thirdly—I say that the specification does clearly tell a person how he can obtain the material, and how to put it on." This is the gist of the position taken by the appellants. The case has not yet been decided, though it seems, in the light of the rulings of the Lord Chancellor the specifications of a patent are entitled to receive a liberal construction and in that event the patent of Mr. Wegmann would probably be sustained.

A SHIP CANAL THROUGH DENMARK.—A concession has been granted to Herr Dahlstrom for a ship canal from the Baltic to the North Sea, between the Bay of Kiel and Brunsbuttel, in the estuary of the Elb. Its depth throughout is to be 20 feet 9 inches, its width at the surface of the water 160 feet, and at the bottom 64 feet, the banks consequently have a very gentle slope. Provision will, moreover, be made, by the adoption of a peculiar system of locks and reservoirs, for increasing the depth of the water to 25 or 26 feet whenever it may be desirable to do so, and this depth will allow of the passage through the canal of the heaviest German ironclad afloat—the Konig Wilhelm, a vessel of 9,603 tons displacement and the largest ship in the German navy, drawing only 26 feet. The canal can, it is calculated, be completed in six years, and will, it is estimated, cost $3,750.000, or about $2,250,000 less than the estimates made a few years ago of the cost of constructing a canal 31 feet deep and 224 feet wide at the surface of the water. In size, it may be added, the proposed Baltic and North Sea Canal, does not compare unfavorably with the Suez Canal, the width of this at the surface of the water being 172½ feet wide, the width at the bottom 70 feet, and the depth about 26 feet 3 inches.

NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

Iowa mill-dam owners must put in fishways.

A grain elevator is being built at Flandreau, Minn.

H. R. Grope, of Hamburg, Iowa, has sold his mill.

Many new flouring mills are being built in Dakota.

A mill is to be built at Pembina Crossing, Manitoba.

A grain elevator is being built at New Richmond, Wis.

A new grist mill has just been started at Antigo, Wis.

W. A Nickell, Vedersburg, Ind., is improving his mill.

The Duluth elevator will be ready to receive this years crop.

John Carlisle now operates the mill at Thorntown, Ind.

The new mill at Flandreau, Dak., is nearly ready to start up.

Milo White's elevator, at Chatfield, Minn., is about completed.

Luederman's mill, recently burnt at Osseo, Wis, will be rebuilt.

A. J. Conger's mill, at Litchfield, Mich., was recently burned.

J. B. Sartell is building a 2-run mill at Sauk Rapids, Benton Co., Minn.

J. J. Kinnersly has sold out his milling business at Keosauqua, Iowa.

The Washburn mill, at Anoka, Minn., grinds 20 carloads of wheat per day.

Mr .R. Ellis, of the Lodi Flour Mills, Lodi, Col., has gone out of business.

Wm. Van Eppe is adding 2 run of stone to his mill at Dell Rapids, Dakota.

Stone and lumber for the new mill at Newcastle, Ind., are being delivered.

Mr. Gust Lundwall, of Carver, Minn., has leased the elevators of that place.

The milling firm of Coffey, Brown & Harrison, at Ashley, Ind., is dissolved.

325 carloads of flour and bran were shipped from the Minneapolis Mills, Aug. 21.

The foundation of the new elevator at Hastings, Minn., is nearly completed.

Mr. Lane has completed extensive improvements in his grist mill at Milton, Wis.

Two thousand bushels of new wheat have been stored in the elevator at Waseca.

R. Stoops, Lebanon, Ind., is making extensive additions and changes in his mill.

The Phœnix mill, at Tracy, Mo., has been leased by Messrs. Fansupp, Riley & Co.

The Ames mill at Northfield, Minn., is turning out 400 barrels of flour per day.

The Lemoore Flouring Mill Co., at Lemoore, Cal., is succeeded by I. H. Harn,

The mills in Faribault, Minn., are grinding new wheat and good results are reported.

Bingham & Price have sold their mill, at Sabetha, Kas., to S. A. Groninger & Co.

The new flouring mill at Monticello, Minn., will be ready to commence grinding Sep. 1.

H. C. Chubb, of Edson, Chippewa county, Wis., is going to build a three run grist mill.

It is probable that a fine flouring mill will be built soon at Flat Rock, Oconto Co., Wis.

W. H. Allen will build a flour mill, and W. L. Roseburn a feed mill at Lake Benton, Minn,

James Tamm has accepted the position of head miller in the Phœnix mill, in Minneapolis.

Messrs. B. F. Stotler & Co., a milling firm at Logansport, Ind., have dissolved partnership

Hobart, of Minneapolis, and B. & E. Dickey are about to built a flouring mill on Elk River, Minn.

Peter Netz, of Sulphur Springs, Ind., is about to erect a first-class flour mill at that place.

A. D. Ellsworth, of Minnesota City, is introducing the roller system in his mill at that place.

Wash McNeice succeeds Thomas Pinches as head miller in the steam mill at Sauk Center, Minn.

The work of piling for the elevator foundation at Stillwater, Minn., was commenced Aug. 14th.

Bowman Bros. are succeeded by Brinkman & Roberts in the milling business at Pawnee Rock, Kas.

Work is being rapidly done on the new mill for the Pembina, D. T., mill, for the Pembina Milling Co.

W. H. Allen, of Winona., Minn., is going to build a two story flouriug mill at Lake Benton, Minn.

The Longmont feed mills, at Longmont, Col., report busy times and large sales of feed and flour.

The Bangs mill, at Sharon Springs, N. Y., has been repaired aud furnished with new machinery.

Calkins & Richmond have succeeded to the milling business of Eldred & Co., at Michigan Center, Mich.

Quincy millers import wheat and flour barrels from St. Louis, finding that cheaper than to buy at home.

Messrs. Kinnard & Laird have succeeded O. W. Baldwin & Co. in the milling business at Ottawa, Kas.

Wm. B. Thomas & Co's flour mill in Philadelphia, burned Aug. 25. Loss, $100,000; partially insured.

The Victor Heater Co., of Minneapolis, are making many sales of their ending stones and other machinery.

F. R. Baumgartner, Stafford, Kan., orders a mill mill outfit of Nordyke & Marmon Co., Indianapolis, Ind.

S. W. Little & Co., Lincoln, Neb., is adding to his mill two pair of millstones, gearing, shafting, pulleys, belting, etc.

Street's mill, at Boonville, Miss., is reported in a flourishing condition, and its products are recommended as the very best.

S. E. Skillins, of Richmond, Me., orders a small mill for custom work of Nordyke & Marmon Co., Indianapolis, Ind.

16 sets of rollers have just been added to the Galaxy mills, Minneapolis, also other necessary machinery to match.

New Orleans expects to export 30,000,000 bushels of grain next season, and a produce exchange has been established.

The excavation has been made for Roberts & Perkins' new mill at Fargo, Dak., and building will be commenced at once.

The new elevator on the Minneapolis & St. Louis road, at Britt, Iowa, is nearly completed. This gives Britt three elevators.

S. M. Hurd's flouring mill burned, at Atchinson, Ks., on the morning of August 11. Loss $12,000. Insuraace $6,200.

Wyatt & Walkins Bros., Prospect, O., have ordered elevator machinery of Nordyke & Marmon Co., of Indianapolis, Ind.

A fire at Whitehall, N. Y., Aug. 12, burned Sherlock's steam mill and twenty other buildings. Loss heavy. Insurance $40,000.

Mr. Samuel Lamer, of Belleville, Ont., is fitting up the stone building adjoining his paper mill as a first-class new process mill.

The Dart Elevating Co. has recently organized with a capital of $600,000, for the purpose of building a new elevator at Buffalo, N. Y.

The Richfield Mill Co., of Richfield, Utah, has ordered the outfit of a small custom mill of Nordyke & Marmon Co., Indianaplis, Ind.

It is reported that the Minneapolis mills and the Artic Mills of Minneapolis will put in the new Stevens Roller mills of Neenah, Wis.

Messrs. Schulte & Quilling are building a Spaulding patent grain elevator at Menomonee, Wis., Its capacity will be 15,000 bushels.

H. Nunnemacher, owner of the Grand Opera House building is seriously thinking of changing the elegant structure into a roller flour mill.

Hubbard & Brown have erected a cooper shop 70x80 feet and three stories high in connection with their flouring mill at Mazeppa, Minn.

The Junction mills, of River Falls, Wis., received their first new wheat from the town of Kinnickinnic. It was white Fife and graded No. 1.

Mr. M. B. Sheffield, owner of a half interest in the Walcott flouring mill at Faribault, Minn., has purchased the other half of Mr. Henry Chaffee.

Wm. Gunn, the Minneapolis mill-wright has taken the contract to remodel the mill of the Milwaukee Milling Co. and B. Stern's New Era Mill.

The citizens of Alma, Neb., offer $10,000 and the best mill site in southwestern Nebraska to any one who will build a first-class mill there.

Homer Baldwin has purchased the Diamond Mills, in the city of Youngstown, Ohio, and will at once remodel them. The plant is valued at $80,000.

A new elevator company has just been organized at Indianapolis, Ind., under the name of the Capitol Elevator Co. The stock is placed at $25,000.

A Corliss engine of 250 horse power is to be procured to furnish power for the new flouring mill at Anoka, Minn., the water-power having proved insufficient.

The Geo. T. Smith Middlings Purifier Co., will exhibit one of their machines at the Minnesota State Fair at Minneapolis. Goodhue will hold the reins.

The Victor Heater Co., of Minneapolis are putting in 4 run of Potts' ending stones in the Crown roller mill of that place; also 4 run in Washburn mill C.

The demand for the premium New Era middlings mill made by Nordyke & Marmon Co., Indianapolis, Ind., requires the shipment of one or more each day.

Messrs. Davis & Johnson are building a new mill at Malford, Neb. The mill will have four run of stone rolls and other accompaniments of a first-class concern.

The flour mill of Beynon & Maes, at Medford, Minn., burned Wednesday together with three thousand bushels of wheat. Loss not stated; insurance $14,000.

Dennis & Son, Boscobel, Wis., order millstones, gearing, shafting, etc., of Norkyke & Marmon Co., Indianapolis, Ind., and are making important additions to their mill.

A woman at Red Clay, Ga., laid her baby in a box at a grist mill, forgot all about it, and went home. The miller filled the box with meal, and unknowingly smothered the child.

Geo. Callihan, a boy fifteen years old, while waiting for grist at Harris' mill, near Centerville, Md., went up stairs unseen by the miller and got caught in the machinery and was killed.

The mill at Valley City, Dak., is to have a new water wheel and new machinery. It is rumored that Mr. John Russell is to become either a partner in the business or sole proprietor.

The Illinois Railroad company broke ground for their million bushel elevator at Cairo, the other day. A large force of hands are at work, and the building will be pushed rapidly to completion.

Messrs. Robertson & Co.'s merchant and custom mill, at Oakville, Ont., has been refitted with improved machinery and a storehouse with a capacity of 16,000 bushels has been added.

It is stated that the consumption of American flour in Great Britain the past year has exceeded by twenty per cent any previous year in the history of the trade, and its popularity is increasing.

A correspondent of the *Pioneer Press* says that the water power at Dell Rapids is, with the exception of that at Sioux Falls, the best in Dakota, and it is, as yet, used only by one flouring mill.

Mr. John Mapes, of the firm of Mapes & Lewis, millers at Lowell, Iowa, has purchased a flouring mill at Mill Grove, Nodaway county, Mo., and will depart soon to take possession of the mill.

The dam accross the Wabash river at La Gro, Ind., which cost $60,000, and was a feeder of the old Wabash & Erie canal, was blown up with powder recently by some parties unknown.

The North Star Iron Works, of Minneapolis, are nearly in full running order, and Minnesota millers generally are congratulating themselves on having such a fine establishment in their State.

The Jackson, Iowa, *Sentinel* says: Our millers are complaining of the toughness in grinding the new wheat. Very little of it has gone through the sweating process and hence but a meagre turn out.

The dam of the upper Kelley mill, at Eau Claire, Wis., was entirely washed away by the recent high water. The mill remained in its place, although much of the bank about it went with the dam.

Richard Page, miller in F. T. Smith & Co,'s grist mill, at Forester, Mich, while extricating a horse that had become tangled in his halter strap, was kicked in the side by another horse and fatally injured.

Mr. S. F. Balcom, formerly of New York, but for the past two years engaged in the grain and milling business, at El Dorado, Kan., is building a 10,000 bushel elevator at Lamar, Burton county, Kan.

The mill at Sheridan, Mont., is being changed under the direction of one of Nordyke & Marmon Co's millwrights, and the gearing, etc., is under construction at their works in Indianapolis, Ind.

A company has been formed at Eau Claire, Wis., under the name of the West Eau Claire Elevator, Storage and Forwarding Co., for the purpose af building an elevator on the spur track near Half Moon lake.

The demand for good millstones is on the increase. We are informed that Nordyke & Marmon Co., Indianapolis, Ind., have over 130 millstones under construction at their extensive works to fill present orders.

Messrs. E. P. Allis & Co., of Milwaukee, are suing prominent saw mill owners for infringing their patents on a saw mill dog. The Courts have decided in their favor and compromising is now the order of the day.

Thos. Pavitt & Co.'s flour and rice mills in London, were totally destroyed by fire on the 13th of July. The building was 80x40 feet, six stories high. The loss is over $50,000. The mill and its contents were insured.

The manipulators of the great Keene wheat deal are supposed to be several million dollars out of pocket, and all that is left of the immense transaction is the adjustment of losses and a few hundred thousand bushels of grain.

The Homer flouring mill, at Homer, Ill., owned by M. Smith, was burned, with all its contents, soon after midnight last Saturday night. Loss, $6,000 with no insurance. Extensive repairs had recently been made in the mill.

Messrs. A. A. Freeman & Co.'s mill, at La Crosse, Wis., is about ready to start up after a stoppage of several months for the purpose of making improvements. The mill has been thoroughly overhauled and its capacity increased 200 barrels a day.

Doud, Son & Co.'s cooper shop at Winona, Minn., was destroyed last week by fire, originating in the heaters located in the engine room. Loss, $3,000 to $4,000. Thirty employes are thrown out of work. The shop will be immediately rebuilt.

Gray's mill, at Lancaster, Wis., has been under repairs for some weeks. A new 35-inch Houston wheel is being put in, and the mill will, in a few days, be in spendid condition. The work is superintended by Mr. Wm. Russell, of Goodhue county, Minnesota.

Alexander, New & Boots is the style of the firm now owning and operating the Woods mill at Greenfield, Ind. They have recently added improvements to the mill at a cost of $5,000, Nordyke & Marmon Co., Indianapolis, Ind., planning and making these additions.

The Geo. T. Smith M. P. Co. have recently sold one No. 0 purifier to R. Gregg & Co., Cannon Falls, Minn.; two No. 0 machines to White & Beynon, Lanesboro, Minn.; and 7 No. 1 machines to C. L. Colman, Winnebago City. They also furnish the machines for the Queen Bee Mill, at Sioux Falls, Minn.

The mill owned by the Queen City Milling Co., of Springfield, Mo., having recently been enlarged and improved, is now considered the largest, finest, and most thoroughly equipped new process mill in Southwestern Missouri. All the work was supplied by Nordyke & Marmon Co., of Indianapolis, Ind.

Messrs. Glenn Bros. of Hillsboro, Ill., whose flour enjoys an enviable reputation, have contracted with Messrs. C. B. Slater & Co., of Blanchester, O., to furnish them with the Slater Reel and remodel their chests and manner of handling the stuff which will enable them to rebolt all their flour without any addition of machinery.

The Chicago, Burlington & Quincy Railroad Company have completed arrangements for the erection of a large elevator on their property in East St. Louis. The elevator will have a capacity of three quarter million bushels, and will be mainly owned and wholly controlled by the railroad company and will cost in the neighborhood of $200,000.

Col. Mason, of Washington, D. C., counsel for the Consolidated Middlings Purifier Co., and G. C. Butler, of Indianapolis, counsel for the La Croix Purifier Co., were in Minneapolis several days this week engaged in examining witnesses and taking testimony in the case between the two companies, in which the latter claims the sole right to the use of the over-lapped boards in a purifier.

O. Huckstadt, Esq., of Louisville, Kan., has for some time contemplated the erection af a four-run new process mill, and, having visited the various mill supply houses, places his order with Nordyke & Marmon Co., of Indianapolis, Ind., exclusive manufacturers of flouring mill machinery. The motive power, which is of the Corliss type, will be supplied by the same firm.

Messrs. John Feichter & Sons of Liverpool, England, represented at Minneapolis by Mr. Louis B. Feichter, write us that they are putting in three Helvetic Middlings purifiers into J. A. Christians Anchor mill. They will exhibit at the Minneapolis Exposition, commencing Sept. 7, their Patent Fir Roller Mill; Helvetic Purifier and Patent Bolting Chests. These machines attracted much attention at the Millers Exhibition in June at Cincinnati.

Gen. Albert J. Meyer, who died at Buffalo last Monday morning, was the father of the Signal Service and Weather Bureau. He took charge of the Signal Service at Washington in 1867; the first telegraphic warning of danger at the ports was bulletined November 8, 1870. The first cautionary signal was displayed at Oswego, N. Y., Oct. 26, 1871. Gen. Meyer attached great importance to the commercial value of the Weather Bureau. It was his constant aim to make the service valuable to the agriculturists, to mariners and to commerce. How valuable it is these different interests in all parts of the country will gladly testify. How rash it has been to disregard the warnings of the service some great disasters show.

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MILWAUKEE, SEPTEMBER, 1880.

SUBSCRIBE for the U. S. MILLER. Only $1 per year.

MR. J. L. GOULDWRIGHT has severed his connection with the firm of Simpson & Gault of Cincinnati, O.

THE exports of domestic breadstuffs for the year ending July 31, 1880, were of the value of $151,411,463, against $109,331,153 in the year ending July 31, 1879.

THE Annual Fair of the Wisconsin State Agricultural Society will be held at Madison, Sept. 6, 7, 8, 9 and 10th. Competition open to the world except in a few instances.

WE call the attention to the advertisement of hard-wood saw mill for sale. We are assured that this is really a bargain for any one with moderate capital. The property is located at Wonewoc, Wis., and can be bought cheap, as it *must* be sold.

THE *Milling World* will undoubtedly hereafter be an authority on *gudgeons*. The August number devotes about four pages to the subject. Wenborne undoubtedly knows how to catch 'em.

THE North Star Iron Works of Minneapolis, Minn., have been purchased by Milwaukee parties and hereafter Messrs. Frank Stern, L. Schleisinger and V. L. Rice will run them. Success to them we say.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

We will send a copy of the MILLERS' TEXT BOOK, by J. M'LEAN, of Glasgow, Scotland, and the UNITED STATES MILLER, for one year, to any address in the United States or Canada, for $1.25. Price of Text Book alone, 60 cents. Send cash or stamps.

Mr. J. E. French, of Montevideo, has about prefected a self-shocker, designed to be attattached to the side of a self-binding reaper, and as the bundles are bound they are desposited upon the shocker, and when enough bundles have been collected they are left standing in a tightly compressed shock.

WE had the pleasure of meeting recently, Mr. Louis Gathmann of the Garden City Purifier Co. of Chicago, Ill., and he reports business to be in a very satisfactory condition. The new purifier and other new machinery has at last been perfected and our readers may expect to hear about it in full in a short time. The milling public will await the news with interest.

WE have received a copy of Geo. P. Rowells American Newspaper Directory. It is a handsome book and more perfect and complete than any former work of the kind. It is of great value to all newspaper publishers and to advertisers. All who advertise extensively should provide themselves with a copy. Price $5.00. Address Geo. P. Rowell & Co., New York, N. Y.

IT is rumored that a stock company in Milwaukee, with a capital something like a million of dollars, has been formed for the purpose of building a monster flouring mill, which shall fairly eclipse everything else of the kind in the world, the capacity being variously stated at from 6,000 to 10,000 barrels per day. —*Northwestern Miller.*

Verily, some of the Milwaukee boys have been feeding Hoppin on "taffy."

THE Yaeger Mills, the largest in St. Louis, were totally destroyed by fire on the night of Aug. 17. The Yaeger Mills were built by Messrs. E. P. Allis & Co. of Milwaukee in 1877 for the Yaeger Milling Co. of St. Louis. They were valued at about $250,000, and the mill and stock were insured in 90 companies for $285,000. The Yaeger Mills manufactured 328,754 barrels of flour in 1879. This casualty is a severe blow to the milling interests of St. Louis. It is to be hoped that the mill will be rebuilt.

THE Chief of the Bureau of Statistics furnishes the following information in regard to immigration: There arrived in the custom-districts of Baltimore, Boston, Detroit, Huron, Key West, New Orleans, New York, Passamaquoddy, Philadelphia and San Francisco during the month ended July 31, 1880, 56,123 passengers, of whom 49,922 were immigrants, and 3,922 citizens of the United States returned from abroad. Of the total number of immigrants arrived there were from England, 5,388; Scotland, 1,251; Wales, 51; Ireland, 6,067; Germany, 11,275; Austria, 2,006; Sweden, 3,779; Norway, 1,743; Denmark, 908; France, 598; Switzerland, 577; Spain, 24; Holland, 148; Belgium, 75; Italy, 748; Russia, 557; Poland, 188; Hungary, 454; China, 865; Dominion of Canada, 12,716; Cuba, 62; all other, 442. During the year ended June 30, 1880, 457,243 immigrants arrived in the United States, an increase of 279,417 over the number arrived during the preceding fiscal year. The year of greatest immigration was the fiscal year 1873, when 459,803 immigrants arrived, exceeding the immigration of the last fiscal year only 2,560.

THE BIGGEST WHEAT FARM IN THE WORLD. The harvest on the great Dalrymple farm near Fargo, Dakota, of 36,000 acres is now in progress. There are 24,000 acres in wheat and 12,000 in oats—excellent crops. The reaping machines began work on Aug. 16th—125 of them—in several divisions, moving along through the waving grain like lines of soldiers. Each reaper has three horses or mules. A number of steam threshing machines are up and ready for work. The grain, after being harvested, is shocked for a few days' drying, and then hauled to the threshers and threshed without being stacked. The wheat will this season average 18 bushels to the acre, and the oats 90. The total wheat product of the season from this one farm will be about 430,000 bu. After being threshed the grain is loaded on the cars of the Northern Pacific railroad and transferred to Duluth, where it is shipped by the lakes and by the Canada and New York canals to the seaboard. The owners expect to net 60 per cent. per bushel on their wheat.

Wheat on the Other Side.

The wheat crop of Australia, harvested in January, 1880, was at first estimated at 500,000 tons, then at 400,000 tons. The latest advices from that colony state that there were 1,480,000 acres of land under wheat, with an average yield of about 11 bushels to the acre, which would give a gross out-turn of 16,300,000 bushels, by far the largest quantity ever produced in a single season in the colony. Deducting from this the requirements for seed and home consumption, say for seeding, 1,600,000 acres, and five bushels per capita for 257,000 population, will take 1,325,000 bushels for food, or for food and seed 2,925,000 bushels, leaving a surplus of 13,375,000 bushels for export. This represents 361,500 tons shipping measurement, 2,240 pounds to the ton. About 3,812,400 bushels of the new crop have been shipped up to the 1st of April, 1880. It is expected that New Zealand will have 100,000 tons of surplus wheat available for export from the crop harvested during February 1880.

FOOD EXHIBIT IN LONDON.—The Consul-General of the United States at London has furnished the Department of State with a copy of the conditions of the International Food Exhibition which is to open in London in October, continuing from the 14th to the 20th. The objects of the exhibition are to bring prominently before all classes of the public, and in a comprehensive manner, the multitudinous articles applicable for food, both animal and vegetable—domestic, colonial and foreign—together with the various modes of producing and preparing the same for consumption, embracing all the different processes of manufacture, preservation and cooking.

The conditions imposed regarding exhibitors and articles to be exhibited are in substance as follows: The right to refuse unsuitable articles reserved. The charge for floor space will be one shilling per square foot, and eight pence per square foot in the galleries, to be paid at the time of allotment, Every article must bear a descriptive label containing detailed information respecting its construction, use and retail price. Persons may be employed to explain exhibits; managers not responsible for safety of objects; cost of transportation to be borne by exhibitors. Prize medals and certificates of merit will be awarded.

[Continued from First Page.]

solidated brain it had its origin. From the dome which will be considerably higher than that of any other building in Milwaukee, a magnificent view of the city will be afforded—it being 160 feet above the first floor of the building. The dimensions of the first hall entered upon the first floor will be 60x40 with ticket offices, library, directors' room, assembly room of the police force, reception room, ladies' toilet and other rooms communicating. Upon the same floor will be found the museum halls 80x35 and 64x48 feet respectively. That portion of this floor devoted to museum and art gallery purposes, will be fire proof. The passenger elevator from first floor to dome will be located without doubt in the center of the main building. A portion of an annex to the main hall will be devoted to the purpose of an aquarium which, it is intended, shall be a conspicuous feature of the exposition. Immense ventilating shafts will be also provided for. The addition to be set apart for a floral exhibition is really by itself. It is to be a building of glass and iron extending along the Cedar street front and projecting a uniform distance of about 40 feet from the main building. Immediately in front of the entrance will be constructed a rock grotto and provision made for a picturesque waterfall. The principal hall will be 300x140, with commodious galleries upon the second floor—the room in its entirety being so arranged as to accommodate at least 20,000 people without crowding. The main hall will be so constructed as to be thrown into one or the space may be so devided as to admit of three commodious halls, 140x100 feet each. Independent of the gallery space the southerly portion of the hall thus divided will comfortable accomodate from 4,500 to 5,000 persons. In the event of a grand concert or other entertainment this part of the hall will be set apart for that purpose. The central sub-division will be used for mass meetings, etc., and in the northerly portion the machinery on exhibition will have permanent place. Included in the list of large and small rooms upon the westerly side of the building is the restaurant, 35x80 feet, which will be found quite a necessary adjunct to the mammoth affair. Exhibitors of machinery will have their labors materially lightened, it having been determined to have a drive way into the main hall from State street. In the basement below the restaurant, will be found a kitchen and larder of leviathan proportions, also the boiler room, which will be fire proof.

The second floor will be of the same general dimensions as that below with the addition of a commodious gallery extending in unbroken circumference with a projection of at least 40 feet on the northerly extremities and 20 feet on the sides. Surmounting the fire proof projection on the Fifth street side of the building may be found a balcony, three spacious apartments for an art exhibition and two smaller ones for the same purpose. As a matter of course, each of the forgoing named rooms will have an excellent skylight. Space has also been allotted on the second floor for dressing rooms, elevator entrance, wide and convenient stairways easy of ascent, etc., with a magnificently constructed and ornamented band stand upon the west side of the gallery, fronting the main entrance.

Boulder Gulch.

The many friends of Col Collins of the well-known millfurnishihg house of Collins & Gathmann, will be pleased to read the following extract from the *La Plata Miner* of Silverton, Colorado: "Messrs. Reed and Collins have been busy putting the Queen of Boulder in condition to deliver ore to the new smelter which they claim will be built this season, by the owners of the Solomon Mountain North Star at the mouth of the Boulder.

"Col. Collins of Chicago, expects to leave camp on Sunday or Monday morning for the sultry regions beyynd the range. He assures us that were it not for important business interests at home and his desire to attend the approaching Tri-ennial conclave of Knight Templars at Chicago, that he could not be induced to leave San Juan until the snow fell. Some folks may think the Col. comes out here for his health but if they do they are mistaken, for he has been industriously "absorbing" mining property whenever he saw a chance for a bargain. Among his latest purchases we note the Iowa Lode on Round Mountain, which we are assured is one of the most promising prospects in the country. Col. Collins informs us that he has had assays as high as 1000 ounces in silver and 48 ounces in gold. Of course he has had many lower and don't claim to average even half as much, but he claims thst no other mine in camp can show better assays from ore picked up among the croppings. We are satisfied that he has made a good investment and hope that he may find 'millions in it.'"

What Kansas Is.

Kansas, at the present day, is recognized as the leading fruit state in the Union, having taken the prize at every horticultural exhibition where she has competed.

As a grain producing state she yields precedence to but one or two commonwealths, while in 1878 she led the states in the number of bushels of wheat raised. It will also be remembered that Kansas is not yet twenty years of age.

Her increase of population has been phenomenal—over three hundred per cent,—the like of which has never been known in the history of any nation or state upon the globe.

She has over three thousand miles of railway, and it is hardly fifteen years since the first rail was laid within her boundaries.

Hers was the hand that extended freedom to the blacks and set the general government a good example. Her population is of the thrifty, sturdy, frugal class which is not discouraged by any disaster.

She will be the first agricultural state in the union inside of four years.

Her school system will rank with that of any state, for Kansas knows, feels and appreciates that education is the foundation and the corner stone of our government.

ACCORDING to the *France*, "the preliminary workings for a channel tunnel, uniting England and France, have had satisfactory results. The promoters have sunk their shaft to the stratum, in which they propose to bore the tunnel, and are now going to sink another shaft and lower all the machinery for the bore. In eighteen months they expect to have reached 2 kilos. under the channel, and in three or four years to have completed the task."

A RED-HOT MILLER.—A dispatch from Jacksonville, Ill., bearing date Aug. 9, says: Tom Beckett, formerly a miller of this place, shot and severely wounded an officer who attempted to arrest him this afternoon. Some time since his wife separated from him on account of his cruel treatment of her. Lately he tried to get her to return to him, and when she refused he seized and carried off their infant child, taking it to Quincy, where it died a few days later. This morning he forcibly entered the house of his mother-in-law in search of his wife, but failed to find her, and then, after exchanging pistol shots with her brother, fled. He was found in a corn field and began firing on the officers. A deputy sheriff was wounded in the groin and Detective Freeze in the breast. Beckett was shot in the leg before he surrendered.

We clip the following from the *Dixon (Ill.) Sun:* Work on Becker & Underwood's mill has begun. The hammer and bustle of industry, out of ruins, is a cheerful sound—most joyful in its awakening. A number of men are now at work constructing a temporary bridge across the race to the foundation. The railroad company will immediately set about fixing their burned track on the race in order to be able to deliver lumber and building material. For the mill four hundred thousand feet of lumber has been purchased. Mr. Jacob Patrick will have charge of the entire work. The building will be 84x50 feet, five stories high, with an elevator on the pier east of the mill, 22x36 feet, adjoining the mill proper, 90 feet high, the full height of the mill. The entire building will be of wood, sheeted with iron. Messrs. Becker, Underwood and Patrick are now in Milwaukee selecting and giving plans for the manufacture of the inside machinery. There will be twenty-six rollers to do the "crushing," the system of flour manufacture known as the "new process," and only two stones will be used. The capacity of the mill will be from four to five hundred barrels a day. When completed it will be the model of the west. The estimated cost is $50,000. If no drawbacks occur, the frame of the building will be up in sixty days and Messrs Becker & Underwood expect to be turning out a superior quality of flour by the middle of November or the 1st of December next.

A careful estimate has been made of the yield of wheat in Minnesota, now being harvested, and the lowest figures show an average of seventeen bushels per acre,—a total yield for the State in round numbers of 50,000,000 bushels. In the northern and northwestern counties the yield will be something enormous, thirty-five bushels to the acre being frequently the case. The quality of the wheat will be good.

THE WHEAT CROP OF 1880.

Where It is Grown—Its Extent—Its Enormous Amount.

What Shall We Do with It?—How Much will It Bring?

Within the memory of men now in active business the wheat crop of the United States was no element in the food supply of the world, outside its own borders.

Thirty years ago American grain or provisions were not a known quantity in Europe, as there was no surplus for export. At that time Europe, however hungry she might be, fed herself, or starved. The demand from England, which owing to her small area of land, as compared with her population, has for a century been the great food-consuming country of the world, drew her supplies from the wheat fields of Russia, through the Baltic ports, and from the Mediteranean ports of Northern Africa.

Each geographical division of the globe: Europe, Asia, Africa and America fed themselves, or starved. The great wheat fields of to-day were unknown and inexistent.

Now, through the medium of steam transportation, and the settling up of newer regions, the source of supply has been changed and most marvelously increased, while the point of consumption remains nearly the same.

England is still the point to which the surplus food of the world flows for a final market. Europe is the only division of the habitable globe that does not produce food enough to eat. Russia, until the past fifteen years, furnished the surplus of wheat required to supply any European deficit. Since then marked changes have occurred in the sources of supply, and America, to-day, is furnishing so much of the wheat as to have become prime factor in the trade, furnishing during the past year 175,000,000 to 180,000,000 bushels in wheat and flour, of a deficit of 250,000,000 bushels. The balance of the deficit was not furnished, as formerly, by Russia entirely, but from sources even newer than America: India and Australia.

Russia is now the only European country that is counted on for any surplus, and as it is reported that, on failing crops, she can no longer be depended on for any definite supply, it is as well in all calculations to ignore her as a source of supply, although for years to come she will probably furnish a large but quite variable and indefinite quantity of the deficit.

The countries now looked upon as the wheat purveyors of Europe are North America (the United States and Canadas), India and Australia, of which America is of paramount importance, as she is able to supply any probable deficit alone.

In the United States only a small section comprises whe at belt now under cultivation that produces an excess of the requirements of the population. Only nine States, according to the returns of last year, produced an excess for export, viz: Minnesota, Iowa, Kansas, Missouri, Michigan, Wisconsin and Nebraska, on the Atlantic slope, and California and Oregon on the Pacific. The adjoining Territories are, however, being rapidly developed, and will this year go to swell largely the increased productions of the States above named.

It will be noticed that the wheat territory is confined to the section north of the Ohio and west of the Mississippi river, and to the great Pacific slope. The great unsurveyed and as yet unsettled areas in the tract thus imperfectly described, adapted to the raising of wheat, is practically illimitable. Not one-tenth of the land is yet occupied, and if it were all under cultivation, as are the older parts of Minnesota, would produce in one year sufficient to supply twice the quantity the whole world requires. The world's present consumption of wheat is estimated at 2,000,000,000 bu. The present production of the American wheat belt is about 500,000,000 bu. With the undeveloped lands constantly being utilized, the increase in wheat production is likely to far outstrip that in other portions of the globe, and only the interpositions of obstacles to the free movement of the wheat to points of consumption can thwart the apparent destiny of this country as the granary of the world for the years, if not centuries, to come.

To that lying within the boundaries of the United States is to be added a vast area in the Dominion of Canada, stretching along the lakes, through the Red river country, and ending in a vast unsettled region, believed to be admirably adapted to the raising of small grains.

The wheat crop of the United States is designated by two generic terms—"spring" and "winter." The spring wheat is grown on the lands north of the parallel of 40 degrees, and mostly in the States and Territories north and west of the foot of Lake Michigan. The spring wheat section comprises the States of Wisconsin, Minnesota, Iowa, and the adjoining Territories.

The winter wheat States comprise, on the eastern slope, Michigan, Illinois, Missouri, Kansas, Nebraska, and all the States south of the Ohio river, as well as the entire Pacific slope, comprising California and Oregon.

The production, owing to the immense increase in California, Oregon, Missouri, and the States along the Ohio Valley, has for the past year made winter wheat the prime factor in the trade. It is harvested earlier than spring wheat, and goes into the channels of trade before the spring wheat is garnered.

The rapid opening up and settlement on the Dakota and other northwestern lands, is again increasing the supply of spring wheat, and may ultimately give it the preponderance, as to quantity, which it formerly held.

The Crop of 1880.

The reports throughout the harvest season were, as usual, conflicting, but at the close of this week the wheat of the whole country is garnered, and the reports are nearly unanimous that the crop is bounteous and the quality excellent.

Winter Wheat.

The harvest commenced earlier than usual in the Southern States, and was unexceptionally good both as to quality and quantity,—so good as to force an unusual amount into market during the past month. Michigan reports a crop of 34,000,000 bus of white winter wheat against 31,000,000 bus. last year. Illinois and Indiana show a much larger acreage and a better yield. On the Pacific coast the increase both in acreage and yield is large. The San Francisco *Journal of Commerce* estimates the crop at 56,000,000 bushels, which is in excess of the crop of last year 20,000,000 bushels, or nearly 40 per cent. Oregon reports a gain of 30 per cent, both in acreage and quantity. It is believed that there is a surplus for export from California and Oregon of not less than 45,000,000 bushels, the San Francisco *Journal of Commerce* estimating the surplus of the State of California alone at 25,650,000 centals—42,750,000 bushels.

Spring Wheat.

The spring wheat sections have doubtless produced an amount of wheat largely in excess of the bounteous harvest of last year.

In Wisconsin, floods on the rivers and unpropitious weather has, in some parts of the State, nearly destroyed the crop, but the damage has not been in the best wheat-growing sections, and the crop of the whole State it is believed will aggregate as large as last year, although owing to the fact that the southeastern portion of the State has turned largely to winter wheat, the supply of spring wheat may show a slight decrease.

In Minnesota, which leads all others in the production of spring wheat, the crop is all harvested, is of excellent quality, and simply enormous in quantity,—the lowest estimate being 10,000,000 bu. in excess of last year, and the aggregate quantity being estimated at from 38,000,000 to 45,000,000 bu.; 40,000,000 bu. is certainly not an extravagant estimate of the yield of that State this year.

Iowa gives only a moderate report, although the acreage has been considerably increased. If she furnishes as many bushels as last year, it will be better than we expect.

Beyond these States, away out as far as railroads go, there is nothing but uninterrupted reports of great harvests of spring wheat, waiting purchasers and transportation. The area of wheat acreage along the line of the Northern Pacific Railroad is estimated at 10,000,000 acres, against a known acreage of 6,000,000 acres last year. At the very moderate estimate of 10 bushels to the acre, this would give 100,000,000 bu. of wheat in that region, one-half of which has never entered into any statistical statement before.

Thus having in a general way reviewed the situation we come, in the absence of figures, which will be accessible to nobody till the wheat is sold and passes into the channels of trade, to the attempt to estimate the volume of the enormous crop that is now garnered.

The Amount in Bushels.

The crop of last year, according to the reports based on what has already gone into the channels of trade, was 450,000,000 bushels. There is certainly no State in the Union that reports a less yield than last year. There is to be added to the product of last year the acknowledged increase in Minnesota of 10,000,000 bushels, in California of 20,000,000 bushels, in Dakota of, say 1,000,000 bushels, in Michigan of 3,000,000 bushels, and that of all the outlying territory along the lines of Western railways which cannot yet be ascertained, except in a general way not reducible to figures.

Assuming the crop of 1879 to be correctly stated at 450,000,000 bushels, there can be no reasonable doubt that that of the present year will exceed 480,000,000 bushels, and is quite likely to reach 500,000,000 bushels. The increased acreage reported by the Agricultural Bureau as sown this year, corroborates our estimate if the yield does not fall below the average for the past ten years.

The question now paramount is, *What shall we do with it?* We may, although no country ever did, use for seed and home consumption 5.5 bushels per capita, which for 50,000,000 of population would dispose of 275,000,000 bushels. This leaves, estimating the crop at 480,000,000 bushels, 205,000,000 bushels surplus. Add to this the visible supply reported last week, of 13,000,000 bushels, and it shows a surplus of 218,000,000 bushels.

Last year, under a most extraordinary demand from Europe, we exported 180,000,000 bushels. This is hardly likely to occur during this year. The general harvests in Europe are, instead of being unexceptionally poor, as last year, fairly good, and consequently no demand above ordinary years can be reasonably expected.

The following table shows the exports of wheat and flour and the price of wheat for the past ten years, also the acreage, yield and products in the United States:

Years.	Acreage.	Yield per Acre.	Total Product. Bus.	Price per Bushel.	Total Value of Product.	Wheat & Flour Exported. Bus.
1870	18,992,591	12.4	235,884,700	$1.04.2	$245,865,045	52,574,111
1871	19,943,883	11.5	230,722,400	1.25.8	290,411,820	38,965,755
1872	20,858,359	11.9	249,997,100	1.24	310,180,375	52,014,715
1873	22,171,676	12.7	281,254,700	1.15	323,594,805	91,510,388
1874	24,961,027	12.3	309,102,700	0.94.1	291,107,895	72,912,817
1875	26,381,512	11.0	292,198,000	1.00	294,580,980	74,750,982
1876	27,027,021	10.4	283,356,500	1.03.7	300,259,300	57,149,949
1877	26,277,546	13.9	364,194,146	1.08.2	394,695,779	92,141,626
1878	32,108,560	13.1	420,122,400	0.77.7	326,346,424	150,562,506
1879	32,545,899	13.7	448,755,118	1.11	499,008,803	180,000,000

From the above table it will be seen that the average export demand for Europe, adding the extraordinary demand for the past two years, is less than 86,000,000 bushels per annum. It is therefore hardly to be expected that the apparent surplus will find an ultimate market at present prices.

The crop will start from the granaries of the farmers, and after going through the eddies of speculation, and resting in the ponds of local trade, find its level at much lower prices than have ever before been known in this country.

There are, however, counteracting influences which it may be well to consider:

The sparse supply of the European countries for the past two years has entirely depleted the ordinary reserve. With a revival of business, and a reinforcement of their purchasing power, which has been so weak for the past two years, they would not only buy what was demanded for immediate consumption, but refill their exhausted granaries. So, at fair prices, the immense surplus of the American wheat crop of 1880 may be disposed of.

It will, however, find its path to a legitimate market through devious ways. Speculation will stand in its way, although ultimately it will force its own channel.

As to the price of the article, that is "a thing no man will find out"—that it ought to be lower than ever before, under the law of supply and demand is certain. Excepting corn, there is no product of the earth in such superabundance as wheat, and, relative to other necessities of life, it must take a much lower range in price than now obtains before it can be consumed.

The Largest Sewing Machine in the World.

Mention has already been made, says *Design and Work*, of the modifications of the Singer sewing machines to adapt them to certain kinds of work. The latest of these we must allude to more prominently, and introduce the reader to the largest sewing machine in the world. This gigantic stitcher has just been completed, and may thus be described: The machine weighs over four tons, and is in some respects of new design, uniting much simplicity of construction with great strength of parts. It is adapted for general manufacturturing purposes of the heavier sort, although specially made for stitching cotton belting, an article which is now taking the market as a cheap and serviceable institution for gearing and the ordinary leather belting. The material used is of great strength and toughness, and is sewed together in plies or layers, up to an inch in thickness. The belting in being sewed together is passed through heavy feed rollers some nine inches in diameter and over eight feet in length, getting stretched and pressed in the process. There are two needles at work, with two shuttles, and the shuttles can be removed from the bottom without disturbing the overlying plies of belting. The rollers between which the work passes are actuated by reversible worm and cam motions, and the machine has, in addition to these roller-feeds, what is known as a top-feed motion, suitable for a lighter class of work. The stitch, as in the ordinary sewing machine, can be easily adjusted from one-eighth inch upward, and the pressure of the rollers on the work passing through the machine can be regulated at the will of the operator. The machine, which is driven by steam, has been made for a manufacturing firm in Liverpool.

Original Home of Vegetables.

A Cincinnati correspondent of the Chicago *Inter-Ocean* says: A recent inquiry as to where the cereals and other products come from, has led me into some good agricultural reading, and it may be interesting to have the following digest and which can be preserved for future reference and basis for profitable talk, and to while away a long winter's evening. Madder came from the East. Celery originated in Germany. The chestnut came from Italy. The onion originated in Egypt. Tobacco is a native of Virginia. The nettle is a native of Europe. The citron is a native of Greece. The pine is a native of America. The poppy originated in the East. Oats originated in North Africa. Rye came originally from Siberia. Barley was found in the mountains of Himalaya. Wheat is supposed to have come and to have grown spontaneously in Tartary, north of the Himalaya mountains. Parsley was first known in Sardinia. Sunflower was brought from Peru, Cabbage grows wild in Siberia. Buckwheat came from Siberia. Millet was first known in India. The apple and pear are from Europe. Spinach was first cultivated in Arabia. The mulberry-tree originated in Persia. The horse chesnut is a native of Thibet, The cucumber came from the East Indies. The quince came from the Island of Crete. The radish is a native of China and Japan. Peas are supposed to be of Egyptian origin. The garden cress is from Egypt and the East. Horse radish came from the South of Europe. The Zealand flax shows its origin by its name. The coriander grows wild near the Mediterranean. The Jerusalem artichoke is a Brazilian production, Hemp is a native of Persia and the East Indies. The tomato originated in South Africa, but was known in England as early as 1597. Deodens, a Holland agriculturist, mentions the tomato in 1583, as a "vegetable to be eaten with pepper, salt and oil." The bean is a native of Persia. The beet originated in Africa and Asia. The cabbage came from England. Cayenne pepper comes from the tropics; the best varieties from the West Indies. Celery originated in Europe, and is especially fine in England and Germany. The sweet potato came from tropical America, and early introduced into Europe. Corn, or maize, a native of South America. and early introduced into Europe.

The Bakers of Paris.

Visitors of the French capital always carry away a lively sense of gratitude to the man who invented French bread. They do not like it at first, but they end by swearing by it, and discovering that it is infinitely better for the digestion than any other ever kneaded. The bakers of Paris form a very extensive corporation, and their personality has of late been regarded with more interest than usual, because they have entered upon a prolonged series of strikes. Of course, the aim of these strikes is to secure a permanent increase of wages, which are by no means high considering the harsh nature of the work. There are four thousand workmen employed every night in the week, to make the nine hundred and fifty thousand kilogrammes of bread which Paris consumes in twenty-four hours, (The kilogramme is about two and two-fifths pounds.) The baking establishments are in the basements of large buildings, and looking down through the windows, left open winter and summer to admit the air, one can see the half-naked men struggling with the immense masses of dough. Each bakery has one employe who is called the "brigadier;" it is he who molds the dough, puts it in the oven and bakes it. There is another called the "aid;" in old French parlance he was known as the "groaner," and is sometimes called so to-day, because, in detaching a suitable portion for a long loaf from the immense mass of dough in the trough he is forced by the violence of his effort to utter a plaintive "Ugh" as a wood-chopper does. The "aids" in the Paris bakeries are men of immense muscular force. Hundreds of them die from exhaustion or from drink, but those who survive acquire biceps like steel. The endeavor which they make time after time for hours together to bring their hands out of the clinging dough is naturally bound to develop the chest and arms. These men work from eight o'clock in the evening all night, and they are compelled to be on hand twice during the forenoon to attend to the "raising" of the bread. The workmen are divided, like compositors, into regulars and "subs," and their utility is so unquestionable that the employers have of late acceded to most of their demands. But if they should become exacting beyond reason, Paris may wake up some morning and find itself without bread.

The Niagara Falls Mill.

This is one of the finest mills in the country, both in point of design and convenience, the substantial character of the building and machinery, and the high finish and the excellence of the workmanship. The plans were made by Messrs. E. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., in the fall of 1877, and in January, 1878, the entire contract was awarded to them. They furnished the entire machinery and superintended the erection of the mill and power, turning it over to the owners, Messrs. Schoellkopf & Matthews, of Buffalo, N. Y., in September of that year, in complete running order.

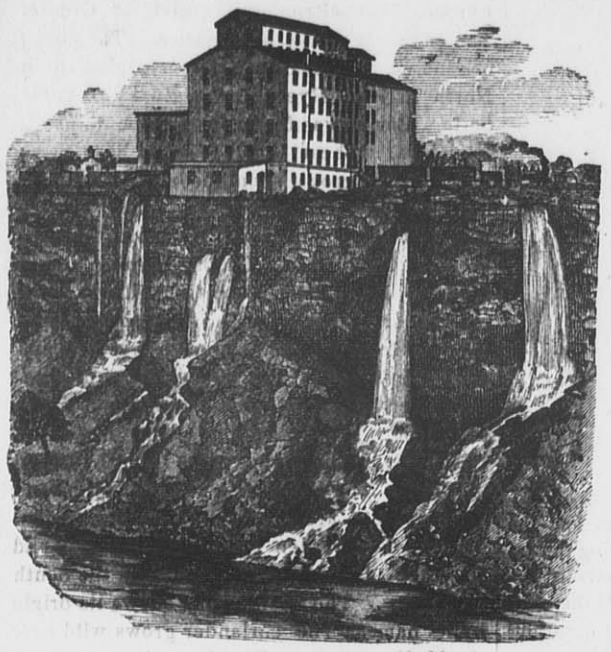


FIG. 1—THE NIAGARA FALLS MILL.

The mill and elevator are situated on the brink of that immense canon, nine miles long, which Niagara has worn out of the solid rock in the lapse of centuries, and whose depth at the mill is 310 feet. The location is something over a half a mile from the falls, and at the end of that expensive canal, though only a mile long, which taps Niagara river above the rapids and falls. The head race is about 300 feet long, the sides being built of dressed stone laid in cement, and is arched the greater part of its length. There are two head-gates, one at the pond and the other at the bulk-head. This last is made of cut stone, and is 18 feet square, and deep enough to hold fifteen feet of water. Both race-way and bulk-head were made deep enough to stand over two feet of ice without drawing upon the head. From the bulk-head the water is brought to the water-wheels, a distance of 58 feet, in a tube made of boiler iron, and ten feet in diameter, the water leaving the tube at right angles with the head-race. The pit in which the water-wheels are placed was blasted out of solid rock on the edge of the precipice. It is 50 feet deep, 34 feet wide and extends back 30 feet. The pit under the large wheel is 7 feet deep and 9 feet wide, and that under the smaller wheel is 7 feet deep and 6 feet wide. The penstocks of both wheels are placed on iron girders, supported by heavy iron columns. The motive power is furnished by two turbines. The larger turbine is 54 inches in diameter, and is placed in an iron penstock. Under a head of 52 feet it gives 660 horse-power, which is said to be the greatest power furnished by any wheel west of Lowell, and the greatest power supplied to any flour mill in the world by a single wheel. It is calculated that the power it supplies would drive a forty-run new process mill, with all the necessary machinery. The shaft of the wheel is of steel, and is 53 feet long and 5 inches in diameter. This wheel drives the mill proper and all its machinery except the flour packers. These and the cleaning machinery, together with the elevator machinery, are driven by a 36 inch turbine in an iron penstock, which, under the same head as the larger wheel, developes about 300 horse-power. The shaft for this wheel is also of steel, 3½ inches in diameter, and of the same length as the shaft from the larger wheel. Both wheels are regulated by water wheel governors. The upright shafts of both wheels are carried on wrought iron "I" beams, 36 feet in length, and fastened at either end to heavy cast brackets, which are firmly bolted to the sides of the pit. The driving wheel and line-shaft are carried in cast iron bridge-trees, which are supported by three wrought iron "I" beams placed across the top of the pit. It will be seen that everything except the head-gates connected with the carrying and utilizing of the power is built of iron or stone. We have thus enlarged upon this branch of the subject, not only because it is one of the most interesting points in connection with the mill, but also because it is the most extensive application of water power in the world. The present edifice is but the beginning of a series of manufacturing establishments which will make Niagara famous as an industrial center. The canal, where the power becomes most conveniently serviceable, is only about two hundred feet from the river, and there is room right there for thirty mills, each with a hundred feet front, and each driven by a practically unlimited water power. Moreover, this power may be used all the time. In winter the rapids cause a kind of granulated ice, which clog the wheels of the paper mill at Goat Island. This is not the case with the power supplied to the Niagara Falls Mill. Ice may form in the canal two or three feet thick, and yet an ample supply of water will run under the ice as long as Lake Erie remains where it is.

Let us now glance at the mill building and elevator, which are accurately represented in our engraving, but the imposing appearance of which can only be appreciated by actually seeing it and taking in the *ensemble* of the situation. The material used in construction was Niagara limestone, quarried from the basement and wheel-pit, and the walls are four and a half-feet thick. The main building is 130 feet long, 65 feet wide and 108 feet high. There are six stories, of which the first, third and fifth are 16 feet high; the second, fourth and attic, 14 feet high, and the sixth story 10 feet high. The roof covering the structure is iron. The mill is planned for 32 run of 4½-foot burrs, and has at present 22 run in operation. The burrs stand in two lines of eleven pairs each, the main line-shaft running between these lines. The shaft is supported on an adjustable cast iron stand. The burrs are driven by quarter-twist belts and are placed on solid iron hursts. On the stone floor there are six flour packers and a very nicely furnished office.

The third floor contains 6 sets of Wegmann's porcelain rollers and 4 sets of chilled iron rollers, the wheat garners, the flour bins over the packers, the bran bins and three two-reeled bolting chests for dusting middlings. The fourth and fifth floors contain the bolting chests, in which there are 40 reels, 4 large-sized bran dusters, 14 purifiers and the exhaust fans from the stones. On the sixth floor are the gearings to drive the bolts heads of elevators, aspirators, first dust room from purifiers, etc. The attic contains two reels, machinery to drive the passenger elevator that runs from the top to the bottom of the mill, dust rooms, etc.

The elevator and cleaning rooms connected with the mill are 132 feet long, 40 feet wide, and have a total height of 88 feet. The elevator is divided into 20 bins, each holding 6,500 bushels, and therefore has a capacity of 130,000 bushels, although more can be crowded into it. The basement is built of stone and the rest of the building of "Lamire walls, covered with corrugated iron. The cleaning rooms are in the elevator building and next to the mill. The machinery is arranged in sets of four machines on each floor, and consists of 2 large brush machines, 4 smutters, 5 separators, 2 cockle separators and a large suction fan. Between the mill and the elevator is an archway 30 feet wide, with two railroad tracks and a wagon track running through it. These tracks are provided with a transfer table, so that cars may be changed from one track to the other, and switched without employing an engine, as the transfer table connects with the power that drives the elevator. Under the table there is a large track scale. The space above the tracks is used for storing bran and offal, which may be drawn directly into the cars.

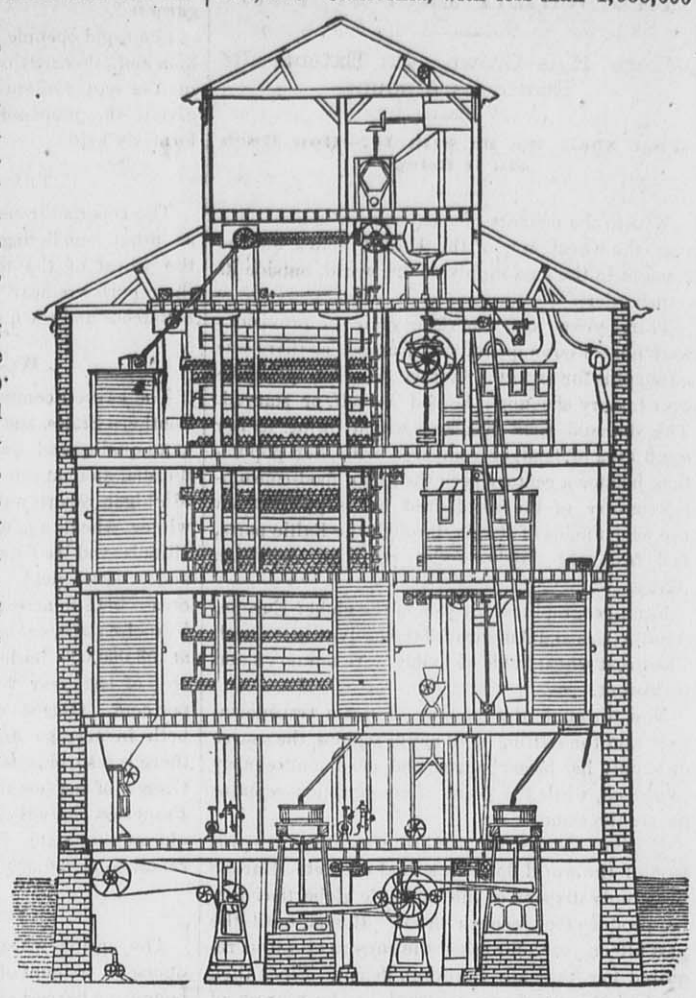


FIG. 2—SECTIONAL END VIEW OF NIAGARA FALLS MILL.

Where everything is on so vast a scale, mere description is inadequate to convey a just impression of the magnitude and workings of the mill. In addition to what has already been said, it only remains to be added that the mill and its accompaniments were constructed with a view to their efficiency and not to their cost to the proprietors. The mill contains every appliance of a first-class modern new process mill, and has a capacity of about 1,000 barrels per day, and employs about 25 men. In connection with the mill, but in separate buildings, are the cooper shops and warerooms. Machinery is used for making barrels, the power being transmitted to the cooper shop from the main building by wire rope.

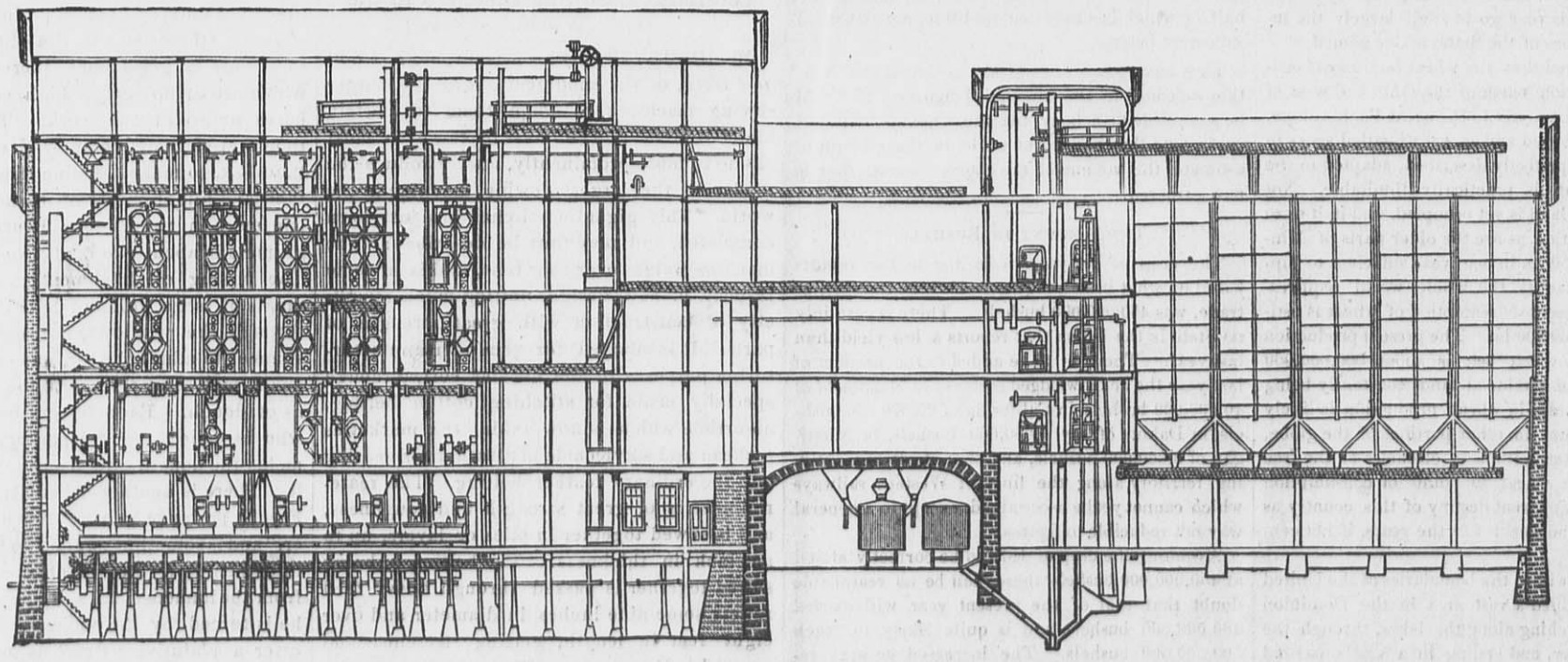


FIG. 3—SECTIONAL SIDE VIEW OF NIAGARA FALLS MILL AND ELEVATOR.

Figs. 4, 5, 6 and 7 show in detail the wheel pit, turbines, iron flumes, the steel shafting, main driving gear and iron bridgetree supporting the same and regulator, forming the magnificent power of the Niagara Falls Mill just described. This is undoubtedly the finest water power in the world, and the machinery illustrated was designed and built expressly for that mill by Messrs. E. P. Allis & Co.

Figs. 8 and 9 are made from photographs taken in the Niagara Falls Mill, and show the packers, and one line of 11 run of 4½ feet stone. The finish of the top of hurst frame, the curbs, silent feeders, light screws, etc., is first-class.

ALABAMA is as large as England, and yet has only 1,000,000 of people to England's 21,000,000. California, with less than 1,000,000 of people, is very little smaller than France with 36,000,000. Nevada is a little smaller, and Oregon larger than New York and Pennsylanvia combined, so either of these new States could easily hold the two old States' combined population of 8,500,000. We do not think Massachusetts over-crowded with 1,500,000, nor Ohio with less than 3,000,000, nor New York with 4,700,000. And yet, if Texas were settled as thickly as New York, its 1,000,000 would grow to 22,000,000; if, like Ohio, it would have 21,000,000; if like Massachusetts, it would hold 52,000,000, or more than the whole present population of the Union. There are only fifteen States out of the thirty-eight which have each more than 1,000,000 of people, while there are fourteen States which have a larger area than England with her 21,000,000. Settled like England these States would have more than 300,000,000. The States toward which emigration is now mainly settling are Minnesota, Nebraska, Kansas, Texas and Colorado. These about equal Missourl in population, while their area is ten times hers. So to be evenly populated like Missouri, sparsely populated as that State is, these five should have 29,000,000; and to be settled like Massachusetts, being ninety times as large, they must have 135,000,000, or three times our country's present population. If the whole territory of the Union were settled like New York, it would contain 270,000,000; if like Massachusetts, 550,000,000; and if it reached England's ratio of inhabitants to the square mile, its popoulation would almost equal the present population of the globe.—*Exchange.*

WHEAT GAMBLING.

The Millers Say It Must be Stopped.

Petition for a Law to Prevent It—Can It be Done?

Mr. Charles Partridge, of New York, a prominent flour dealer, is in the city, canvasing for signatures to a petition to Congress, which perhaps explains itself more fully than can be otherwise done. It is as follows:

THE PETITION.

To the Honerable, the Senate and House of Representatives of the Uuited States, in Congress assembled: Your petitioners beg leave respectfully to call the attention of your honorable body to a serious and widespread evil, which has long been allowed to exist in the community over which the law-making power of Congress extends—an evil whose ill consequences are felt by all classes in this and other countries.

Your petitioners have especial reference to the accumulation of immense quantities of the cereal products of the soil in the hands of a few capitalists, combining for objects of speculation.

It is the custom for these speculators to form pools or syndicates for the purpose of buying and storing grain and flour in such large quantities as to arbitrarily dictate prices and control sales, without regard to the natural laws of trade, which regulate values in the ratio of supply and demand.

As only men of large means or extensive credit are capable of engaging in these enterprises, they become essentially an array of capital against the industrial classes, wherein the banks and moneyed institutions are almost invariably drawn to the support of the former against the latter, and are measurably dependent upon the success of their schemes.

Some of the more prominent evils resulting from these combined operations may be briefly summarized as follows:

1. An unhealthy and feverish state in the produce market, wherein quoted rates furnish no criterion of actual values.

2. The utter paralyzation of one of the leading industries of the land, in the instance of very many of our great flouring mills, in which large amounts of capital are employed.

3. The almost utter suspension, for indefinite periods, of cereal exports, which give employment to our shipping, and meet at fair rates the demands of foreign nations, more or less dependent upon ours for the necessities of life.

4. The imposition of heavy and unnecessary burdens upon a numerous class of our citizens whose immediate necessities compell them to accede to the exorbitant demands of venal and selfish monopolists.

To illustrate what has been said, we subjoin the following carefully prepared estimate of surplus and deficiency in the single article of wheat in some of the leading countries:

Surplus.	
Russia	35,000,000
Austro-Hungary	12,000,000
Chili	4,000,000
Canada and Manitoba	13,000,000
British India	8,000,000
Egypt	2,000,000
Australia	8,000,000
United States	185,000,000
	267,000,000

Deficiency.	
Switzerland, Spain and Portugal	8,000,000
Italy	12,000,000
Germany, Holland and Belgium	18,000,000
England	137,000,000
France	55,000,000
	230,000,000
Surplus over all	37,000,000

It is concluded by a fair estimate that a single one of the so-called syndicates has owned and controlled, since September last, upwards of 70,000,000 bushels of wheat, hoarded and held at prices above the rates at which foreign markets are able to obtain their supplies from other countries.

Hence it is that foreign shipments are arrested, and the gold which would naturally flow into our treasury, is diverted to others. Nor is this all. The "break" which is sure to follow, comes to late, and the commodity which was refused at fair rates to other markets, becomes a glut in ours, to the detriment of the producing districts, over which the back-setting wave spreads and stagnates.

Your petitioners, therefore, pray that your honorable body may see fit to devise some means, not inconsistent with the utmost freedom of legitimate trade, to effectually put an end to the evils herein complained of.

To use the expression of Mr, Partridge, there was

"AWFUL GAMBLING" DONE IN WHEAT

last season. to the detriment of legitimate trade, and the fact is so fully realized by the millers that most of them cheerfully sign this. Among the signatures obtained here are those of Geo. G, Houghton, Edward Sanderson, J. B. A. Kern, W. C. Durant, and Nunnemacher & Co. Since the 16th of June there have been 4000 signatures obtained. Many have signed it who themselves dealt in the way the petition complains of, but claim that they did so in self-defence. Others say that no such law can be a success—that it will be open to evasion. A committee of millers is now actively engaged in collecting signatures. Mr. Partridge will go to Minneapolis, and will on his return stop at Chicago for the same purpose.

Accompanying the petition is a statement of "the iniquities of commerce." It alludes to the tabular statement published in the petition, and says:

This showing drew together monied men, some of whom had never dealt in wheat or flour, to form a syndicate for the purpose of securing to themselves a profit of fifty cents per bushel on our immense wheat crop. To accomplish this purpose, they sent out agents into all the grain-growing States to buy wheat, and they continued this business until their purchases had raised the price of wheat sixty-five cents per bushel, and exhausted the storage capacity in the interior and Atlantic markets, and had pressed into this service numerous lake boats in the West and hundreds of canal boats in New York and other Atlantic markets. The railroads were compelled to order their agents west not to accept grain consigned for storage, as there was no room for further deposits—thus a complete block-ade of the grain crop of the United States was formed early in January, 1880. It was estimated then that 120,000,000 bushels of wheat remained in the farmers' hands, and the syndicate owned and controlled 60,000,000 bushels, which they held during January and February twelve cents per bushel above the price at which the deficient foreign countries were obtaining their supplies from Russia, Hungary, Australia and elsewhere, which materially diminished exports.

The syndicate found they could not put down the price and sell freely for export without carrying down prices of wheat in all the markets of the world, Hence they arbitrarily held their wheat at high prices, in the faith that the surplus in other countries would be used up, and the necessities of the people would aid their purpose to extort their tribute of fifty cents per bushel. In this dilemma the syndicate commenced coining money by demanding high prices, and reporting fictitious sales of wheat among themselves, or otherwise, for export, future, long, short, &c., at fabulous figures, for the purpose of inveigling novices into buying or selling wheat, whereupon the old sinners at the crank turned prices in an opposite direction, creating what are called "corners," and thus swindling the unwary out of their money. They abrogated the laws of supply and demand, and disregarded the relative prices of wheat in the different States and in all the markets in the world. For example, they created a "corner" in Chicago, whereupon this gambling ring arbitrarily put the price of wheat in that city twelve cents per bushel higher relatively than in New York, and five cents per bushel higher than in Milwaukee, at which place ligitimate trade prices are the same as at Chicago, showing that the absolute control of prices was possessed and exercised by the syndicate to swindle the victims of their duplicity and to break up legitimate trade.

The millers throughout the country have been obliged to pay gambler's prices for wheat to grind. They have consigned their flour t the interior and Atlantic markets, and drawn advances on the same, with instructions generally to have the flour stored unless the cost price of it could be obtained. The quantity so shipped and stored exceeded the requirements of the people by 2,000,000 barrels, which has been held at $2.00 per barrel above its real value, which $2.00 our people are obliged to pay for permitting gambling in wheat. This flour cannot be sold to foreign countries in need of it without a loss of $2.00 per barrel, which has already ruined many millers, and has seriously injured all of them; and it is now—the 1st of April, 1880—estimated that three-fourths of the mills have remained idle two months, and must so remain until this nefarious syndicate is deprived of its power for mischief.

The same estimate of the surplus and deficiency of wheat in the several countries, in September last, which inspired our rich men to combine for the purpose of preventing people, at home and abroad, from getting bread without paying tribute to them—naturally inspired, honest and generous men to bring their ships to our shores to take away our surplus products to the countries which need them, and the result was 500 ships laid at the New York docks for months, the owners pleading for wheat even at ruinous low freights—two and three pence per bushel, and some even as ballast; bnt the greety gamblers, steeled against every plea, all human sympathy and honorable dealing, sent the ships away empty—the owners declaring they would not bring ships to our markets so long as un-

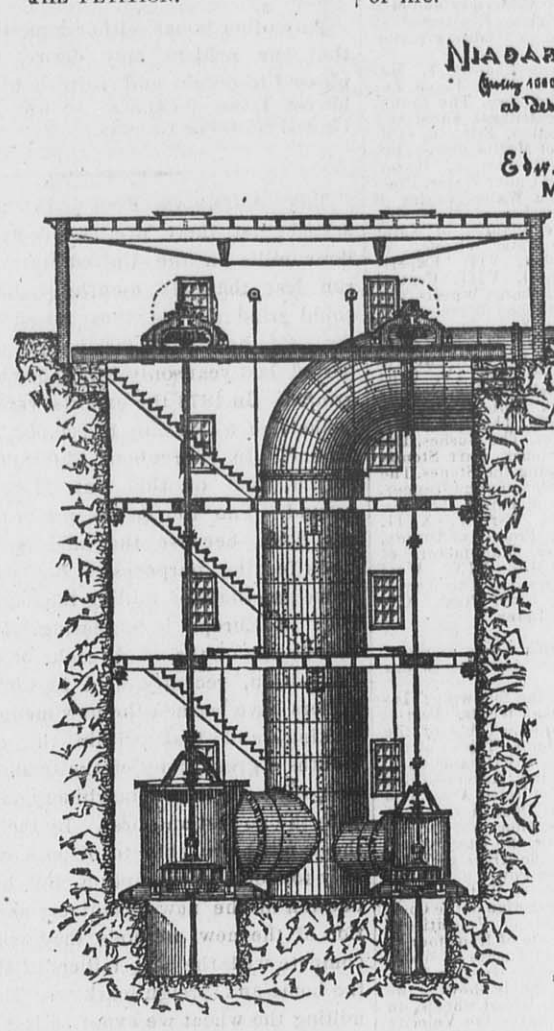


FIG. 4.

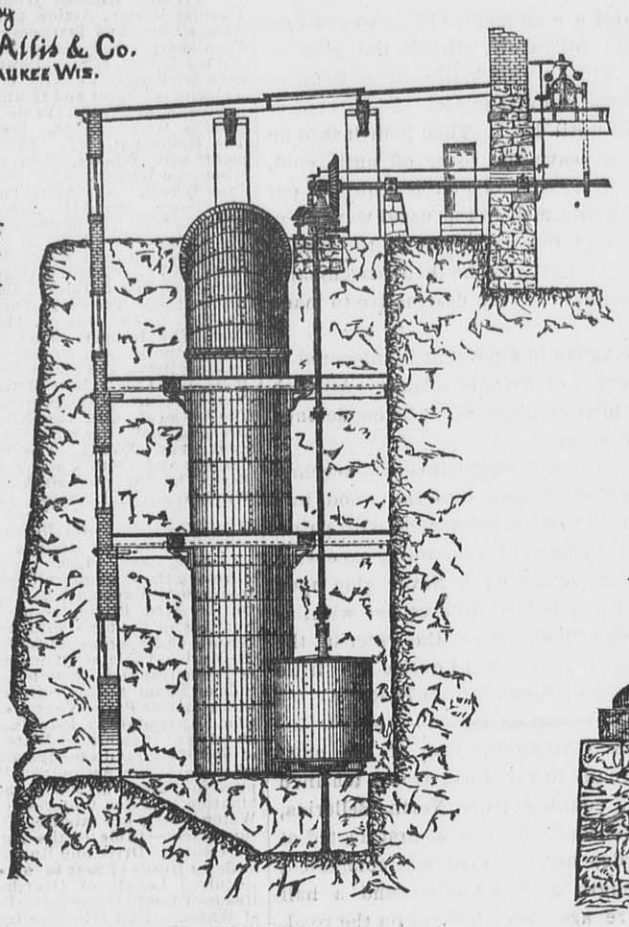
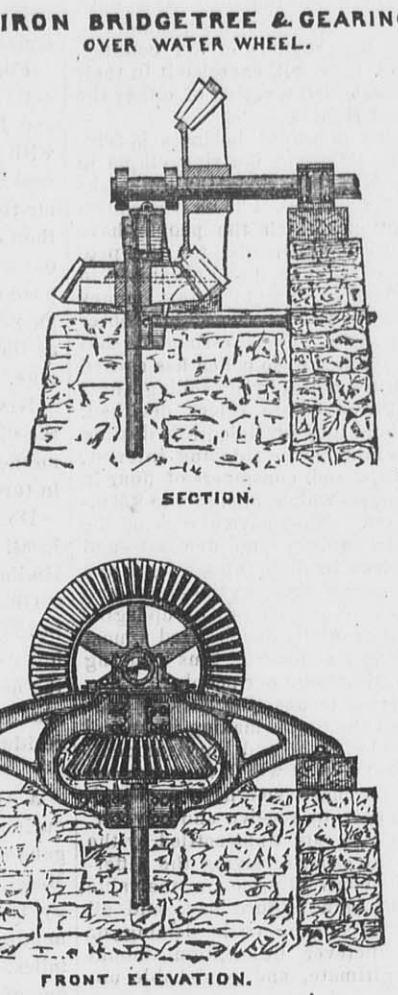


FIG. 5.



FIGS. 6 AND 7.

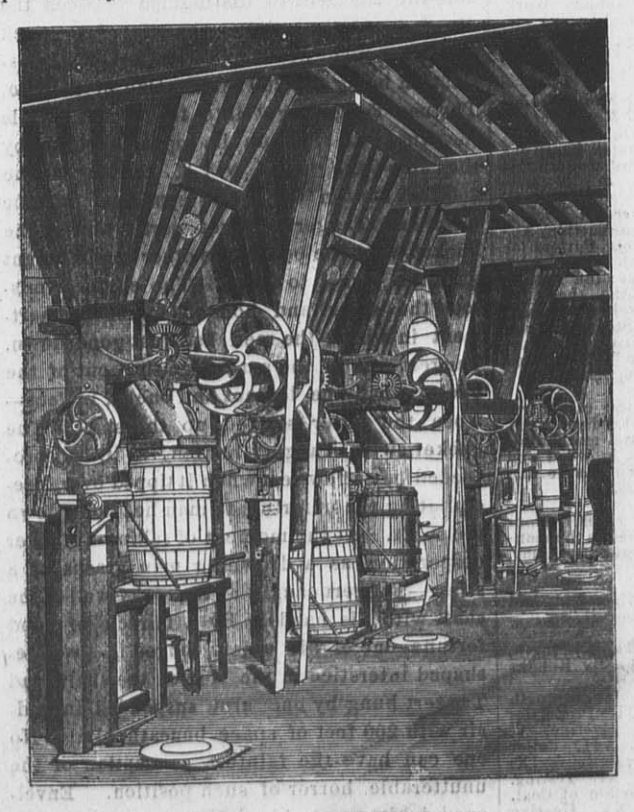


FIG. 8.

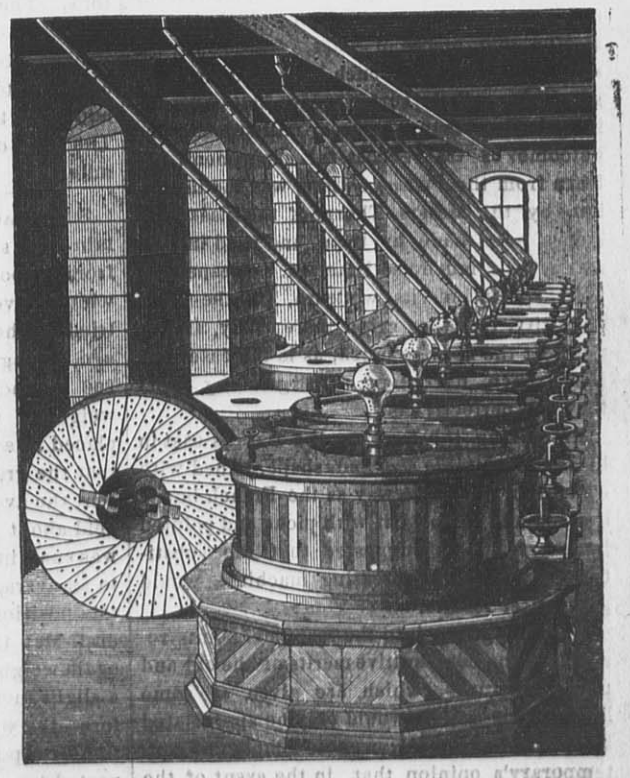


FIG. 9.

principled gamblers are permitted to arbitrarily control the products of our country.

It had been expected that the opening of the lakes and the canals, with the usual reduction in prices of freights, would enable farmers and merchants, not connected with the ring, to get their products to the Atlantic and foreign markets, and realize cost; but it is made known that the trunk lines of railroads have united with the ring to keep up freights and save the gamblers. To effect this they have chartered and otherwise got control of steamboats and other grain carrying vessels on the lakes.

The New York Central and Erie have lines to Buffalo, and the Pennsylvania to Erie; the Baltimore and Ohio to Sandusky, and the Wabash from Toledo to Buffalo. And now, having obtained control of the lake, canal, and rail freights, of the products of our country, we may expect they will exercise it in their combined interest, irrespective of either the people's needs or rights.

The end of this nefarious business is foreshadowed by the failure of the ring clique in Grand Rapids, Michigan, involving the banks in the sum of $300,000. Thus it is shown that the institutions which the people have chartered—banks and railroads—for the people's benefit, are combined and organized in this most wicked scheme to extort money from all consumers, and to starve the poorer classes of our people. It is estimated that the Jim Keene syndicate, so called has caused a loss to the United States by not selling wheat to foreign countries before prices declined, and to those whom they inveigled into dealing with them—the millers, the shipping interest, legitimate dealers and consumers of flour in the United States—which amounts to $300,000,000 of dollars. They have abrogated the laws of the trade—supply and demand—and the relative prices in different markets, and interdicted commerce between the States and foreign countries; they have broken up legitimate trade and generally demoralized a most important branch of commerce, thus bringing sorrow and suffering upon our people.

We are in favor of enacting laws by Congress, and in all the States making it a penal offence, punishable by fine and imprisonment, for any person to sell that which they do not possess, or to purchase merchandise which they do not expect to receive and pay for. All contracts which are to be settled by the one paying and the other receiving the difference between the contract price and the value of the article at some future day, and all species of luck or chance trade dealing or gambling, of whatever description should be declared illegitimate, and punishable under the law.

Glass Mill-Stones.

We have already made a brief allusion to the introduction of glass mill-stones into successful use. We have since noticed in the trade and technical papers numerous references to the success that has attended their introduction into Germany. These accounts report recent improvements in their manufacture, which, in connection with the excellency of their work, must bring them into very general notice among all millers. The idea of constructing mill-stones of glass is said to have originated from the observation that the finest flour was produced by those mill-stones which have the most glassy texture; from this observation came an experiment which demonstrated that pieces of glass, combined in the same way as the French buhr, and similarly grooved on their surface, gave better results in grinding than the burr mill-stone. The outcome of this successful experiment, we learn from the *Pottery Gazette*, was the invention, by the Messrs. Thorn, of the glass mill-stones now made by them, and used in Germany with much satisfaction. Respecting their special merits, we learn, on the same authority, that they grind more easily, and do not heat the flour as much, as is the case with the French burr-stone. In grinding grist they run perfectly cool.

In making these stones the glass is cast in blocks of suitable size and shape, joined with cement in the same way as the French burrs, dressed and furrow cut with picks and pointed hammers. It is suggested that the substitution of diamond dressing machines would give better results.

Without going into the technical points respecting the comparative merits of the old and new mill-stones, which are given at some length, but which would only be appreciated by practical millers, we note simply our contemporary's opinion that, in the event of the success of certain experiments now making on a larger and more important scale than any previous ones, "this discovery will be entitled to rank as one of the most valuable of recent years as regards the milling industry."

How to Use Glue.

All the glue as received from the factory requires the addition of water before it will melt properly, and every addition of water (while the glue is fresh made) will, up to a certain point, increase the adhesiveness and elasticity; and it is the duty of every man who uses glue to find out just where that point lies, as it is possible to melt glue and have it so thick that after it is dry or set it will be so brittle as not to adhere to the wood. Some glues will bear more water than others, but all will bear more water than usually falls to their share, and that, too, with greater increase in the quality of the work.

For glue to be properly effective, it requires to penetrate the pores of the wood, and the more a body of glue penetrates the wood the more substantial the joint will remain. Glues that take the longest to dry are to be preferred to those that dry quick, the slow-drying glues being always the strongest, other things being equal.

For general use no method gives so good results as the following: Break the glue up small, put into an iron kettle, cover the glue with water and allow it to soak 12 hours; after soaking boil until done. Then pour it into an air-tight box, leave the cover off until cold, then cover up tight. As glue is required, cut out a portion and melt in the usual way. Expose no more of the made glue to the atmosphere for any length of time than is necessary, as the atmosphere is very destructive to made glue.

Never heat glue in a pot that is subjected to the direct action of a fire or a lamp. All such methods of heating glue cannot be condemned in terms too severe.

Do not use thick glue for joints or veneering. In all cases work it well into the wood in a similar manner to what painters do with paint.

Glue both surfaces of your work, excepting in the case of veneering. Never glue upon hot wood, or use hot cauls to veneer with, as the hot wood will absorb all the water in the glue too suddenly, and leave only a very little residue, with no adhesive power in it.

A CURIOUS RAILROAD.—One of the most curious railroads in the world is the ten-inch gauge road, running from North Bellerica, Mass., to Bedford. It was at first hooted at by the people, but the road was completed, making a length of about eight and a half miles. There are eleven bridges on the road, one of which is over one hundred feet long. The rails weigh twenty-five pounds to the yard. The road is well built and equipped. One grade is one hundred and fifty-five feet. The cars and engines will at first sight create wonder and admiration, their perfect proportions give them a handsome appearance. They are constructed very near the ground, giving them great advantage of safety. The cars have an aisle with one seat on each side in the same manner as ordinary cars have two seats. The length of the cars allow thirty seats, each person having a seat to himself. The cars are supplied with closets, water tank, are heated by steam, and have all the modern improvements. They weigh but four and a half tons, ordinary cars weighing on an average eighteen tons. The trains run at the rate of twenty miles an hour with perfect safety. The engine is placed behind the tender, giving it greater adhesion to the track. They weigh eight tons, and draw two passenger and two freight cars. The cost of the road was about $4,500 per mile.

SHRINKAGE OF WHEAT.—In order to ascertain the shrinkage which wheat undergoes from evaporation, when held in the bin over winter, a very interesting experiment has been tried on the college farm. About six months ago, a long sack was prepared and filled with 200 pounds of winter wheat, accurately weighed. On November 12, 1879, this was placed in a grain bin in the barn; and in order that the grain in the sack might fairly represent the average of that in the bin—the bin held about 150 bushels—the sack of wheat was sunk in the grain as far as possible—say to an average depth of about two feet. In this position it has remained six months, or until May 12, when it was brought forth and again weighed, This second weighing showed a slight increase on that of the six months before—the weight being 200 pounds plus a fraction of a pound. This result was most unexpected to us; and we can only conclude from it that, during such seasons as those of 1879-80, wheat shrinks by evaporation none at all. The shrinkage so often complained of by millers and others, doubtless comes chiefly from "rattage," leaks in the granary, and other obvious sources of waste. The slight increase in weight of this sack of grain, is perhaps attributable to a slight variation of the scales in weighing. It is an interesting fact that this same sack, when exposed to the rays of the sun at a temperature of 95°, fron 11:30 a. m. to 3 p. m., shrunk exactly one-half pound. —*By Prof. Shelton, of the Manhattan, Kas., Agricultural College.*

THE AMERICAN FLOUR INTEREST.—It is stated that there are twenty-five thousand flour mills in the United States, and that if run less than six months of the year they could grind all the wheat raised in this country. Of the 150,000,000 bushels of wheat exported last year, only 28,000,000 bushels were ground. In 1878 the exports were 90,000,000 bushels, of which only 18,000,000 bushels were ground. In 1877 about 57,000,000 were exported, and of this but 17,000,000 were ground. The Europeans prefer our wheat to our flour, because the offal is valuable for stock-feeding purposes. But with our improved methods of milling the demand for our flour in Europe is increasing. It is claimed that as one of the good results of the Millers' Exposition, recently held in Cincinnati, our millers have learned the new methods of flour making, and that within the next twelve months a great many of the smaller mills will cast aside their old machinery and replace it with the newest and best. By the old process these mills are able to dispose of their flour only for local consumption, but by the introduction of the new machinery and the adoption of the new methods they will be able to compete with the best millers of the world in the home and foreign markets. The profits of milling the wheat we exported last year would not have been less than $7,500,000, If only that amount can be kept at home and in the pockets of the millers of the United States it is worth while to clear out the old machinery and do away with the old processes which have been so long and so stubbornly adhered to.—*Kansas City Price Current.*

The Peril of a Miner.

One of those thrilling episodes that occasionall enter into the life of a miner and illustrate its perils, occurred recently in the Wallace and Ferguson mine at Sheep Ranch. The shaft has two compartments, and is 400 feet deep. Both compartments are used for hoisting purposes, signal bells being utilized to enable the engineer to distinguish between the divisions of the shaft. One day last week three men went down in the bucket, their destination being the 200 level. One of the trio, Thomas Taggert, got into the bucket, while the other two stood on its top and held on by the cable—the "usual way." Arriving at the 200 feet station the men stepped off into the level, and Taggert had got partly out of the bucket when the bell in the other compartment gave the signal to hoist. The engineer mistook the signal and hoisted in the compartment in which the men had just gone down. Taggert was in the act of getting out of the bucket—had one leg out and one in, in fact—when the latter started up the shaft. The bucket, with Taggert hanging to it, had proceeded but a few feet when it tipped over, precipitating the unfortunate man headlong down the shaft. At the moment of falling—in utter desperation, as a drowning man grasps at a straw—Taggert caught at the rocky wall of the shaft with his hands. By a miracle of good fortune, one of his wrists lodged in a wedge-shaped interstice in the side of the shaft, and Taggert hung by one arm, suspended in mid-air with 200 feet of space beneath him. No one can have the faintest conception of the unutterable horror of such position. Enveloped in impenetrable darkness, suspended by one arm over an abyss that invited him to certain death if his frail support should give way, and alive to the knowledge that the descending bucket might precipitate such a catastrophe, Taggert's situation was so inexpressibly horrible that its contemplation makes one shudder. Luckily, however, his comrades comprehended the situation of affairs, and by acting promptly prevented a tragic ending of the accident. Taggert was released from his perilous position, escaping any more serious injury than a severe strain of his physical system and mental faculties.—*Calaveras Chronicle*

Free Trade and Protection.

BY HON. JOHN WELCH,

President of the Philadelphia Board of Trade, late Minister of the United States to Great Britain, etc.

It can not be charged against Great Britain that the interests of its people have been disregarded. British interests are avowed by its present most distinguished statesmen as paramount. The world has been inconsiderate enough to assert that at times even human rights and public faith have been subordinated to British interests. For centuries the leading purpose of the nation has been the increase of its resources. The navy expanded and the army grew in numbers. The commercial marine was fostered, and in doing so large subsidies were given. In all possible ways the manufacturing industries were encouraged. and to prevent the competition of other nations the export of improved machinery was prohibited. British interests were paramount. When it became apparent that the circumstances of Great Britain were favorable for its becoming the manufactory of the world and the carrier for all nations, that in doing so a rapid road to wealth and increased greatness would be opened, then it was that a new system was suggested by the statesmen of that day, called a science, said to be based on a theory of Free Trade, clothed in language to delude the world, and held up for imitation by those whose penetration was thought to be unequal to discover that it was as thoroughly protective, as applied to Great Britain, as it possibly could be, for in its inception there was but a single purpose, whatever may be said to the contrary, and that was to promote the best interests of its own people by its adoption at home, and to serve the same purpose by its adoption abroad.

At that moment Great Britain was well stocked with machinery, aud its means of enlarging it were unlimited. In ores and coal supplies were inexhaustible. Its capital was very large. Its commercial marine exceeded that of many nations combined. And its agricultural resources were insufficient for the support of three-fourths of its dense population. How were all these conditioas to be turned to the best account? The conversion of the raw products grown elsewhere and their distribution for consumption among the nations of the world were seen to be a sure source of wealth. How was Great Britain to secure this end? The cost of labor must be kept at its minimum, consequently duties could no longer be levied on provisions, nor on wood and cotton, nor on anything connected with and entering into manufactures, for if this were done they could not be distributed through the world with profit. The only thought was the profitable employment of Great Britain's capital in the world's commerce; of its marine as carriers for all the world; of its population; its coal, which multiplies manifold the sinews of the people; and its machinery in manufacturing for the consumption of the world. To employ these was the great problem, The abrogation of the corn laws was the solution. That was the first step which led to a revolution in the domestic and foreign policy of Great Britain. The contest was long and bitter, but it was successful, resulting in a discontinuance of all import duties on the mass of materials which entered into manufactures for foreign distribution. The growth of Great Britain's commerce dates from this period, and is to be ascribed to this change in its policy, although it will be seen that was coincident with the discovery of gold in California, which occurred in 1848, and was rapidly followed by its discovery elsewhere. The additions to the stock of the precious metals stimulated most if not all of the nations, and Great Britain by its change of policy, was prepared to supply the extraordinary demand which immediately sprang up. The first distinctly-marked improvement in the trade of Great Britain was in 1849; since then its trade has grown to its present proportions. The wealth which has been accumulated has been enormous, and every other nation, without exception, because of the loans made to them by the subjects of Great Britain, is to a very large extent contributing to its income. The policy which produced this prosperity is an evidence of the wisdom of men whose names are written on the roll of fame.

It has made Great Britain very rich, but kept its industrial classes poor. Fleets cover the sea, bringing to its shores the tributes of every land, but the hours of labor have been but little if at all dimished. Its aristocracy and gentry revel in their privileges; princes abound among its manufacturers and its merchants; luxury and elegance are seen on all sides, but the workmen earn relatively no more than they did before this tide of prosperity set in, and the depraved classes are not materially reduced in numbers nor improved in morals. The system has produced great wealth, but it has not secured the general distribution of that wealth.

Let me here turn to the United States. Our tariff has long been a *bete noir* to the English. Even that great man who is so much honored here—John Bright—never alludes to it without showing how much it disturbs him. In speaking of it in his letter to Cyrus W. Field he says, "The man who possesses a monopoly by which he thinks he gains is not open to argument." It has often been said that England possesses a monopoly as a manufacturer for the world because of its superior advantages, of which it could not be dispossessed; and, this being so, one might naturally, perhaps properly, apply Mr. Bright's assertion to himself. The force of it is lost as applied to us, for certainly that can not be called a monopoly which is open to participation in by forty-five millions of people and by those of every other nation who choose to avail of it—and very many have done so, and more are now doing so. It is, to say the least, a broad-spread monopoly, one which was designed to develop the resources of the nation, to stimulate the industry of the people, and to promote general prosperity. Another objection to the tariff is urged by our sympathetic friends across the water, on which they dwell with great tenderness; that is, that it is productive of an unhealthy growth in our manufactures, a hot-house culture. Where is the evidence of the truth of this view? The same reverses which existed here have been felt in England. If our iron and coal, our cotton and wool interests have suffered, theirs have suffered more. We do not charge that on their so-called Free Trade; neither can they charge our misfortunes on our system. The same cause has affected both them and us. No such thought as an undue interference in the affairs of others presents itself to our English friends, for they are earnest in season and out of season in trying to correct our so-called errors, or what Lord Salisbury calls our "faulty theories." Their periodicals and our periodicals are largely filled with their appeals to our intelligence, and often in Parliament and on the hustings are the people of the United States held up as extraordinary examples of ignorance of the simplest principles of economic science. That for which they show most concern, however, is the great agricultural interest in the United States. The wrongs which it suffers because of the tariff wound them to the very quick. Lord Salisbury says in regard to it that it is "a matter of extreme surprise" that the agricultural classes "submit to so heavy and specious a voluntary tax." John Bright says, "Under slavery the man was seized and his labor was stolen from him, and the profit enjoyed by his master and owner. Under Protection the man is apparently free, but he is denied the right to exchange the produce of his labor except with his countrymen, who offer him less for it than the foreigner would give." And yet a large proportion of their produce is bought directly by foreigners. One can not here help asking—and perhaps it is a sufficient answer to all Englishmen who are so grievously distressed on this account—why is it that from one end of the kingdom of Great Britain to the other there is a wail of distress from the agriculturists which has caused universal anxiety and led to parliamentary action for their relief; whilst, if there is a prosperous and grateful people on the face of the earth, it is the agriculturists of the United States? They have a common interest with their fellows, and recognize that our relations to each other are such as to make us all aim for a common prosperity. In this feeling no class shares more largely than the agriculturists of the United States. They can appreciate what improved machinery has done for them; how close the railroads have brought their farms to the markets, reducing the cost of transportation to a small percentage of what they once paid. They have seen their hogs, and sheep, and oxen, and many other articles transformed into preserved provisions in a few minutes, packed and ready for distant markets; their grain stored in huge elevators by machinery, thence to be transferred at an infinitesimal cost, large ships being loaded in a few hours. They know that these are the results of American genius, and that they are found in no other part of the world. They find manufactories rising around them, bringing a population to their doors, giving employment to their children, and rapidly creating a home market for their produce. They are keen observers; their advantages have rapidly increased. They hear our English friends say how much better they might have done, but they can not understand why the English farmer is always going behindhand. The facilities they enjoy they know are unparalleled, and well may they ask themselves, Why should not we be satisfied? When in the history of the world was so strange a fact known as this, that oxen raised at the base of the Rocky mountains and wheat grown in the valleys of Minnesota may within one little month be used as food in the heart of Old English?

These are the results of a system on which we have reason to pride ourselves as a nation, because, originating in the desire to uplift our people, it has been successful. Already the interior of the United States is dotted with prosperous settlements, and our coast lines are marked by seaports of great activity. Everywhere there are inducements for those who in their present homes, under other governments, are looking to the future with anxiety to come and abide with us. To the feature which, by the ardent missionaries of Free Trade, is held up as so odious, as interfering with individual rights, as subversive of economic laws, as checking the prosperity of a nation—to the tariff itself are these wonderful results largely due. As a government is to secure order and personal rights; as the army and navy are to defend up from our enemies and to give us the enjoyment of peace; as universal education is for the diffusion of intelligence, so is the tariff to protect us from competition with the cheap labor of other countries. Every advantage we enjoy may be at some cost, but the results brougnt about by that cost are more than an equivalent. Other systems regard men as machines—the faster, the longer, the cheaper they can be driven the better. Our system looks upon all men as entitled to equal consideration, and if there be a portion of them, as there needs must be under the present organization of society, who must be the laborers for the nation, then that portion by it is protected, not from competition with each other, but from a foreign competition. By this protection a large circulation of money among the industrial classes is promoted, and what follows are increased comforts and an improved condition. As a consequence, our labor is more productive, for it is well fed and clothed, more intelligent, more thoughtful, and more conscientious than that of other countries.

Mr. Bright, in his speech at Manchester, Eng., October 25, to show the great benefits which Great Britain had derived from Free Trade, stated that in 1840 the imports and exports of that kingdom amounted to £172,000,0000 ($860,000,000), whilst in 1878 they had grown to £611,000,000 ($3,055,000,000). This statement met with great applause. By the same process we can establish the superity of protection, which, without the advantages of a large capital, immense possessions abroad, and the earnings of an enormous tonnage, has caused our foreign commerce in the same to grow from $202,000,000 in 1840, to $1,180,000,000 in 1878.

That, however, bears a very small proportion to the large and rapidly increasing commerce among ourselves. Mr. T. Bayley Potter, M. P,, secretary of Cobden Club, in a speech delivered at a banquet given to him by the New York Free Trade Club, on the 12th of November, said: "Internally you are the greatest Free Trade country in the world; may we not hope that soon you will extend your principle to other lands instead of confining it to your States?" This is very suggestive, and, as such experiments ought to be made discreetly, it might not be unwise for our next neigbor, the Dominion of Canada, to suggest a zollverein, by the adoption of our internal and external duties, making a pool of them with ours and a division per capita, between Canada and the United States, and a perfect Free Trade between the two countries. This would open to both a full participation in the advantages which each possesses and do away with all existing barriers. All advantages would be mutual. But should the day come when a Free Trade with England shall be opened, would the people of England rejoice? As we now are, with our better economy of labor and the greater intelligence of our laborers, England is beginning to feel our competition at its own doors very sensibly. It will continue to press upon it more seriously. If it should come to pass, however, that the tariff be repealed, the price of labor must fall to the foreign standard, for the tariff is in a great degree but a question of the price of labor, and one would think no lover of his kind could desire such a result; in that event, as every element required in manufacturing abounds here, cotton, wool, iron, coal, etc., the values of which depend on the cost of labor—and it cannot be pretended that our workmen are less skilled than those of other countries—what could prevent us, as we then would produce at a low cost than other nations, from driving all competitors out of foreign markets?

Who would be the gainers by the policy? It would insure others without benefiting us. It might make the rich richer, but assuredly it would make the poor poorer. On the industrial classes would fall the burden of increased labor with diminished wages, for the weight of a competition with foreign labor must fall upon them. They form the great heart of our country on whose healthful action the general prosperity is dependent.

The welfare of the people of the United States has been our first care, and and it should continue to be. With the population prosperous the nation must be prosperous. It is so now, and if Congress will but continue without change our present system, and *secure* to it the advantage of a sound currency, the result will show the great benefits to be gained by the confidence it will inspire in the community, which will lead to a vast additional development and increase of our resources. Ten years of undisturbed quiet will enable us to reach a point of prosperity never before attained. Should it be that Lord Salisbury, Mr. Bright and Mr. Potter will then turn their eyes upon this favored land, so kind are they in their feelings toward the United States, they will rejoice to find our prosperity so great in spite of our "faulty theories," our "monopoly," and our "ignorance of economic science."

THE BODIE MINES.—For several months all the Bodie stocks have ruled low in the Board. This has not been caused through their want of merit, but rather through the withdrawal of large amounts of capital from the State and the fears entertained by capital remaining in the State as to the action of the Legislature upon their interests. The source of trouble having passed away, the horizon is now clear, and capital will again come from its hiding-place and revivify the veins of trade with its golden stream. The days of stock-jobs and booms have passed away, and in the future we may only look for them to the extent and value of ore bodies uncovered and exposed to view. We are glad such is the case, as it is the only basis upon which mining can be made permanently successful. This brings it within purview of all business conducted upon sound principles and takes from it the gambling feaure—a bane to any enterprise. So far as Bodie mines are concerned, under this new order of the mining trade, the real merit of our undeveloped mines will place them in the front rank of legitimate mining enterprises. It is true our mines remain almost in their virgin purity, yet the favorable prospects of the properties of Queen Bee Hill, Silver Hill, Bodie Bluff and High Peak, in the mines sinking to great depths, and from geological indications known to be close to their ledges, whilst others have already cut them and are now opening them up and developing their riches, it is no experiment with us but an assured fact that our mines, placed in the market at their proper value at the present showing, will advance a hundred per cent within the next six months, purely on their merit, and many of them will advance a thousand.—*News.*

MUST HAVE A SCOTCH HAMMER.—A correspondent writes of an amusing incident which occurred at Oneonta some months ago, and says he knows all the persons referred to, and can vouch for the truth of it: "A carpenter and joiner in Oneonta, about a year ago, said to his fellow-workmen: 'As soon as I can get a chance, I am going to send over home to Scotland and get a claw-hammer as is a hammer, one that I can work with; I can't get a decent hammer in America.' About this time a friend of his was going back to the 'auld sod,' and he commissioned him to go to the best hardware store in Glasgow and get him a carpenter's claw-hammer, the best he could find, regardless of cost. In due time the friend returned bringing the desired tool. The party gathered around him, including some of his fellow workmen, and he proceeded to open the package, in the meantime making remarks: 'I'll show you something to make your eyes water,' as the friend assured him he had brought him the kind of hammer used by the best workmen in Glasgow. He affectionately unwound the wraps, and as he handeded it over to his friends he said: 'There, look at that!' One of his friend did so, and read the trade-mark on the hammer: 'Made at Norwich, N. Y., U. S.' There was no more bragging about Scotch hammers.

The Miller's Wedding.

BY NATHAN D. URNER.

There ne'er was such a marriage in all the country-side
As that of Miller Martin with Janet, the florist's pride;
For all the lads, like miller-men, in rigadoon and reel,
Were clothed in white, as dusted o'er with snowy miller's meal,
And all the lasses, country-wise, the bride's belongings graced
With wildflower-hues in keeping, blue-eyed and rosy-faced,
Till in the joyous interchange of hands and gliding forms
The white were blent with every guise that field and forest warms;
While even the fiddlers rocked amid green twinkling bowers, which made
The come and go of the white-sleeved row, like sunbeams, part the shade.
For rich and past his youth the groom, and sweet as poor the bride,
And his the odd caprice that ruled the merry-making tide.
"A miller-man am I," quoth he, "and thou a florist's maid,
So let our bridals symbol forth of each the human trade.
Mine be the cost, and thine the worth, the beauty and the youth;
Just what we are we will appear, and so preserve the truth."
And thus it chanced that dusty coats in laughing lines oppose
Gay boddices and petticoats in merriment, that closed
In peace, content and happiness: For yonder on the hill
The miller's handsome house looks down upon his busy mill;
Janet, as matron, smiles as sweet as e'er when maiden gay;
Their sunny children make of life a constant Month of May;
While country-girls and miller-men along the road that fare
Still smile to mark the homestead shine amid its chestnuts there.
"There ne'er was such a feast," say they, "in all our country-side
As Miller Martin gave Janet in taking her for bride."

The East Indian Flower Trick.

A writer in the *English Mechanic* explains how the above mystery is performed. He says: This very common trick is known in India as the Mango Trick. I have seen it over and over again. It is very simple, and can only deceive those who know nothing of conjuring, and those who, being so fascinated with it, will only regard it as inexplicable. In India it is done as follows: The performer, squatted on the ground, with two or more attendants, takes out of his bag a mango stone, and hands it round for the spectators to examine. This stone, which is almond-shaped, and about two inches long, he buries three or four inches deep in the ground, and sprinkles the place with water. Then gesticulating and talking rapidly, he covers the spot with a blanket, raising the latter to let the spectator see where the stone is buried, and continuing the process of sprinkling. Going on thus, apparently intensely excited, by means of the blanket he dexterously conceals the spot for a moment, and inserts in the ground a small sprig of mango showing two leaves only. This done, he suddenly lifts the blanket up in the air, triumphant. This process is repeated four or five times, a larger sprig being substituted for its predecessor on each occasion, the last having a mango on it. It certainly is done very dexterously, but the above is the *modus operandi*. A friend of mine who had seen the trick, was convinced that the tree actually grew, and rejected the explanation here given. However, shortly after the description we had the trick performed in the garden, our two selves being the sole spectators. At the end of the trick, to convince my friend, though it was hardly fair on the exhibitor, I suddenly leaned forward and pulled up the last sprig. Instead of a root there was merely the smooth cut which separated it from the tree on which it grew, and below was the stone, unaltered. This the performer, satisfied with his reward, but grumbling at the advantage taken of him, returned to his bag, alone with the sprig and mongo, and carried away with him, to repeat the trick at the next bungalow. I have seen all the Indian tricks, and paid for being taught some. They can astonish no one who has seen the best performances of the kind in Europe. Their reputation must be attributed to the fact that they have mostly been described by young men, who, having seen little of the kind before arrival in India, are unduly impressed with them. Still, the dexterity with which they are performed cannot be denied. Personally, I look on the mango trick as the most disappointing of them all.

EFFECT OF SUNLIGHT UPON OILS.—Says a writer in the *Chemist and Druggist:* "Some time ago we conducted a series of experiments for the purpose of determining the changes which took place in olive oil under various conditions, and we there found that a few hours' exposure of the oil to a summer's sun, in bottles hermetically sealed, was sufficient to produce serious changes in their nature and constitutions. These changes were not at first perceptable, either to taste or external appearances, but they passed rapidly into a second stage in which the oils dimmed in brightness, and in the taste assumed a distinct *nip* or *bite*, instead of the sweet, nutty flavor distinctive of the fresh oil. The same, or at least a very similar *bite*, is very rapidly produced in the cod-liver oil under like conditions and in both oils the change is much more rapid, quickly passing into decomposition if they are exposed in open or loosely-covered vessels. It is, therefore, nothing short of ruin to these oils to place them, as is frequently done for show and purposes of sale, in windows or other exposed positions.

An operator furnishes the following synopsis of the expenses in sending a bushel of wheat from this city to Liverpool: Storage here, 1¼ c.; freight to Buffalo, 7c.; marine insurance, ½c.; Buffalo charges, ⅝c.; canal freight, 6c.; expenses in New York, 1c.; ocean freight, 8c.; ocean insurance, 1c.; total, 24⅛c. The English quotation of 10s. per cental is equal to $1.44 per bushel, leaving $1.19½ per bushel as the present value here, based on present quotations in England.

TO TIE THE COTTON CROP.—About seventy-five thousand miles of hoop iron—enough for a three-fold girdle around the earth—will be needed to bind the forthcoming cotton crop, if it reaches the number of bales predicted by statisticians, or 6,000,000 bales. The number of bands required is six to a bale, or 36,000,000 in all. They are of uniform size, 11 feet in length, and 1,200 weigh a ton. Hence there will be required 30,000 tons of hoop iron, with a total length of 396,000,000 feet. The cost of ties will be about $3,000,000.

THE City Mills at Waupaca, Wis., owned by M. R. Baldwin, are being thoroughly repaired and a good deal of machinery is being put in. About $60,000 worth of improvements will be made when work is finished. Three sets of crushers, the Stevens patent, will be used in the mill, also another purifier, the Geo. T. Smith patent. It is the intention of Mr. Baldwin to run his mill steadily and ship his flour to Eastern markets. The water power at Waupaca is very fine, and there are still extraordinary advantages offered for the erection of new manufactories, especially flour mills. The Wisconsin Central railroad, running through Waupaca, has just completed a branch from the main line to Chippewa Falls, which will give this road a through line from Milwaukee to Minneapolis and St. Paul, thus affording Millers on their line a No. 1 opportunity to buy Minnesota wheat and ship their flour East.

THE testimony of the Notbohm brothers, taken at Jeffersonville, Wis., recently, in the case of the Consolidated Middlings Purifier Co. against the La Croix Co., has practically re-opened the case. These witnesses were examined by respondent La Croix, and the complainant consolidated company objected to it on the ground that it should have been offered in chief by respondent. Complainant will in October or later return to Minneapolis to take further testimony in the traveling brush question. This will protract the case indefinitely, as it will necessitate the taking of testimony on the part of the complainant in Canada, Washington and New York. Further testimony is also to be taken at Milwaukee and Racine on the over-lapping boards device. Col. Mason and Mr. Butler have returned home and are now preparing to meet the new phase of the case, and the examiner has gone to New York to have the record printed.

DECISION IN THE BRUSH SUIT.—The decision in the suit of the Throop Grain Cleaner Co., of Auburn, N. Y., against the Eureka Mfg. Co. of Rock Falls, Ill., was reached June 1, in the United States Circcit Court for the Northern District of Illinois, Judge Drummond, presiding. The decision reads as follows: "This cause having been heretofore heard on bill, answer and proofs and referred to the master, under decree entered, to take and report an account of damages, and the complainants now waiving such accounting under settlement made; It is ordered, adjudged and decreed, that the decree entered otherwise remains in full force and effect; and the injunctions heretofore granted shall stand as to all machines, containing any flanges, rings or any equivalent provision, for expanding or contracting the scouring jacket or case. It is ordered, adjudged and decreed that the defendants pay to the complainants the sum of one cent as its damages, and that the defendants pay the costs."

The Railways of London.

A London paper states that the rails used by the companies within a radius of 6 miles of Charing Cross would form a single line from London to John O'Groat's house, a distance of 750 miles. This estimate does not include the rails in bays and sidings, but it includes all double, treble, or quadruple tracks. Leaving all duplicate lines aside, the incredible number of 260 miles of railway is in daily operation in the metropolitan district. From Hendon and the Alexandra Palace on the north to Penge and Streatham on the south, from Forest Gate and Woolwich on the east to Acton and Willesden in the west, thirteen different companies hold sway, not including the East London, whose line is worked by another company. There are also six short lines, varying from 4¾ miles to 1 mile in length, owned and worked by the companies jointly. The Brighton Company owns the greatest mileage in the metropolis—37 miles. It is closely run by the Great Eastern with 32. Then comes the London and Southwestern with 27; the London, Chatham and Dover and Northwestern follow with 24 each. So far as using the lines are concerned, the London and Northwestern run over more than one-fourth of the whole metropolitan system. The trains of this great company use the lines of five other companies, practically adding 44 miles to their own system. The Great Northeru has running powers over the lines of six companies, embracing 36 miles. The mixed nature of the metropolitan system is apparent in the fact that over the London, Chatham and Dover Railway five companies run their trains. The Metropolitan Company's lines are open to four companies. The Southeastern alone uses no other lines, though it has running powers over the East London. If there be added to this astonishing system of locomotion the 70 miles of tramways now open, the omnibuses which ceaselessly traverse the metropolis from one end to the other, the thousands of cabs, the passenger steamers which ply on the river—the magnitude of the means daily employed by the people of London in getting from one part of the "New Babylon" to another will strike the observant mind. With all this vast traffic the injuries to life and limb, save in the cases of street accidents, are comparatively few. With trains flying above ground and underground, over complicated points and through crowded junctions, collisions seldom occur and seldom result in loss of life.

Glucose—Grape Sugar—Corn Sirup.

The wonderful impetus that has recently been given to the manufacture of glucose and grape sugar from corn, has awakened an interest in the early history of the industry and its introduction into this country. Mr. Lyman Bradley, one of the original inventors of the process of producing those articles from corn, writes to a Buffalo paper in reference to it as follows:

"Grape sugar was long before made from potatoes in Europe, and came here at a cost of from 8 to 12 cents a pound, in gold, when gold was at a premium of 40 per cent. But sugar from corn was not then known. In the year 1863, F. W. Gessling and Lyman Bradley, in the city of Buffalo, improvised a small factory for experimenting, to see if the grape sugar, glucose, and sirup could be made from corn. Although sneered at and ridiculed by their friends as insane, they, by their persistence, succeeded, and in 1864 they obtained a patent, which may be seen on the records at Washington. In July, 1864, a committee of sugar manufacturers and chemists from New York visited Buffalo as experts, to report as to the value of the invention. They remained several days testing the process. They returned, and others from New York took their places for the same purpose. The patentees employed a well known citizen of Buffalo to negotiate a sale of the patent, and on the 10th of November, 1864, a sale was made for $600,000, a stock company formed with a capital of $1,000,000, and stock issued, some of which may be seen in Buffalo bearing that date."

From the supposed folly of Gessling and Bradley has grown up a business in which nearly $30,000,000 are invested. Grape sugar has been made from potatoes and imported here to be used in making wine, costing near 12 cents per pound, it being better than cane sugar for that purpose, it having no taste but sweet if properly made. No grape sugar, no glucose, no sirup, was ever made on this continent or elsewhere from corn until after the invention so made by Gessling and Bradley, and if any credit is due to any one for inventing a process which is proving to be so valuable, the meed of praise belongs to them. For now, instead of importing an inferior article of grape sugar, made from potatoes, at a cost of 8 to 12 cents a pound, large quantities of grape sugar made from corn are exported at 3 cents a pound.—*The Western Manufacturer.*

The Green Bay, Wis., *Advocate* gives the following particulars of the improvements being made in the old stone mill at Depere, Wis.: "One of the oldest and best known flouring mills in this part of the State, is the stone mill at Depere, built some twenty years ago, known originally as the "Wilcox Mill," and owned later by Hon. Randall Wilcox and Capt. C. B. Tyler, and still later by the heirs of the Wilcox and Tyler estate. Quite recently it has so changed hands as to retire the Tyler and some of the Wilcox interests, and a new partner, Mr. Van Valkenberg, of Green Bay, has acquired a part interest, making the partners, besides Mr. V., Mr. Edward and Randall Arndt. With the incomiug of Mr. V. it has been decided to rebuild, almost entirely, the interior and running machinery of the mill, and to make it a model mill for the manufacture of what is known as "patent flour," under the "Hungarian process." Work has been going on through a part of the summer, to that end, which, it is expected, will involve most of the remaining season. The new mill, which will be ready about the first of October next, will be one of the most important on the river. It will have a capacity of 250 bbls. per day, and will be as complete as the improvements and modern devices of the later flouring machinery can make it, and is itself a heavy stone structure—altogether one of the best flouring establishments on the river'"

The Exchange Mills, Messrs. Gulick & Kennedy, proprietors, at Des Moines, Ia., are complimented by the Des Moines *Plain Talk*, as follows: "But it is one of the most complete mills of to-day that we wish more particularly to speak here. Messrs. Gulick & Kennedy, of the New Process Exchange Mills, on East Fifth atreet, have been recently adding more new and improved machinery to their outfit, until they now have every successful modern improvement that inventors and millwrights have devised. The excellent quality of flour turned out by this mill has gained them such a reputation throughout central Iowa that orders are now received daily for large shipments to neighboring cities, and the mill is kept running almost night and day to keep up with orders. All the leading bakers in the city, on both the east and west sides, have long since come to the conclusion, after a thorough trial of all the other flour sold in the city, that they can do the best work with that made at the New Process Exchange Mills. Indeed, there is scarcely a baker in Des Moines that does not now use this flour; and the excellent bread and cakes they turn out is abundant evidence of the fact that they use first class flour."

A NEW point of railroad law has been raised in England, and a *pro forma* order has been entered, with the understanding that the case will be carried up. The circumstances were these: The manager of the Capital and Counties Bank bought a first-class ticket by the Southeastern Railroad, and traveled from Woolwich to London bridge, carrying a handbag containing gold, silver, and bank notes to the value of £2,000. Thereupon the railway company sued the bank to recover £2 12s. 6d., the ordinary charge for transporting £2,000, on the ground that bullion did not come within the meaning of personal luggage, which the company agrees to carry free with each passenger. The preliminary decision was in favor of the railway company.

A LOCAL exhibition of mill products took place a Gratz, Syria, at which nearly all of the millers of the province exhibited. The grain was shown in a raw state, along with samples of the products obtained in the various stages of manufacture. As most of the mills exhibited complete collections, this matter was the chief feature of the exhibition.

Bread Recipes.

London White Bread.—The common proportions used by the London bakers, are: Flour, 1 sack; common salt, 4½ lbs; alum, 5 ozs.; yeast, 4 pts.; warm water for the sponge, about 3 gals. The alum is used for the purpose of *whitening* the bread, but Liebig has demonstrated that this purpose may be better subserved by the use of *clear lime water* in mixing up the dough.

It is the commendable ambition in the English bakers to impart that peculiar tint so highly prized by connoisseurs, and so successfully produced at Vienna and Paris. At Vienna, it has long been known that if the hearth of an oven be cleaned with a moistened wisp of straw, the crust of bread baked in it immediately after presents a rich yellow tint: the theory is that the aqueous vapor retained in the oven has a beneficial effect.

The proper temperature of the oven is between 200° and 225° Centigrade, equivalent to 424° and 480° Fahr., and may be known by the emission of sparks from a piece of wood rubbed on the oven.

The dough loses about 1-7th of its weight if baked in batches, but fully ⅛ if baked in small loaves and placed in the oven separately. The *best bread* contains about 11-16ths of its weight of added water, and *common bread* often much more than ¼. The proportion of water in the London bread has greatly increased of late years, owing to the use of the fraudulent method of making the dough with rice jelly or moss jelly, in wich Iceland moss, Irish moss, or other mosses are used, by boiling 7 lbs. of moss in 10 gals. of water, and using the resultant jelly in making 70 lbs. of flour into dough, which is then fermented and baked in the usual way. It is said that flour treated in this way will yield fully double its weight of good bread. According to Heern, 100 lbs. of wheaten flour will yield at least 125 to 126 lbs. of bread—some say 135 lbs.; 100 lbs. of rye meal, 131 lbs. of bread. A ¼ oz. carbonate of magnesia, added to the flour for a 4-lb. loaf, materially improves the quality of the bread even when made from the very worst seconds flour.

Paris Baker's White Bread.—On 80 lbs. of the dough left from the previous day's baking, as much luke-warm water is poured as will make 320 lbs. flour into a rather thin dough. As soon as this has risen, 80 lbs. are taken out and reserved in a warm place for next day's baking. One pound of *dry yeast* dissolved in *warm water* is then added to the remaining portion, and the whole lightly kneaded. As soon as it is sufficiently "risen," it is then made into loaves, and shortly afterwards baked, the loaves being placed in the oven without touching each other, so that they may be "crusted" all round.

The Secrets of Vienna Bread.—The proportions of Vienna bread, confessedly inferior to none in the world, are: Flour 100 lbs.; water and milk, 9 gals.; salt, 6 lbs. 4 ozs.; pressed yeast, 18 lbs. 12 ozs. According to Prof. Horsford, good fresh middlings flour will compare favorably with the average Hungarian flour used in Vienna. The fresh pressed yeast is obtained by skimming the froth from beer mash in active fermentation. This contains the upper yeast, which must be repeatedly washed with cold water until only the pure white yeast settles clear from the water. This soft, tenacious mass, after the water has been drawn off, is gathered into bags and subjected to hydraulic pressure, until there remains a semi-solid, somewhat brittle, dough-like substance, still containing considerable water. This is the pressed yeast, which will keep for eighty days in summer, and much longer on ice. For use it should be fresh and sweet.

The mixing is commenced by emptying the flour sacks into a zinc-lined trough about 2½ feet wide and 8 feet long, half round in form. Then with a pail holding about 5 gals., equal parts of milk and water are poured, and left to stand until the mixture attains the temperature of the room, between 70° and 80° Fahr. It is then poured into one end of the trough and mixed with the bare hand with a small portion of the flour to form a thin emulsion. The pressed yeast is next crumbled finely in the hands, and added in the proportion of 3½ ozs. to every 3 qts. of liquid, and then 1 oz. of salt in same proportion is intermingled through the mass. The trough is now covered and left undisturbed for ¾ of an hour, and after this the rest of the flour is incorporated with the mass in the above-named proportions.

The mass of dough, being allowed to rest for 2½ hours, becomes a smooth, tenacious, puffed mass of yellowish color, which yields to indentation without rupture and is elastic. It is now weighed into pound masses, and each lump is cut by machinery into 12 small pieces, each ¾ inch in thickness. Of each one of these, the corners are brought together in the centre and pinched to secure them. Then the lump is reversed and placed on a long dough board for further fermentation, until the whole batch is ready for the oven. Before being introduced into the latter, the rolls are again reversed and restored to their original position, having considerably increased in volume, to be still farther enlarged in the oven to at least twice the size of the original dough. In the oven they do not touch each other, and the baking occupies about 15 minutes. To glaze the surface they are touched in the process of baking with a sponge dipped in milk, which besides imparting to them a smooth surface, increases the brilliancy of the slightly reddish cinnamon color and adds to the grateful aroma of the crust.

Aerated Bread.—The water used in forming the dough is placed in a vessel capable of withstanding a high pressure, and carbonic acid gas is forced into it to the extent 10 or 12 atmospheres. The water will absorb and retain it whatever may be its density, in quantities equal to its own bulk, so long as it is retained in a close vessel under pressure. The flour and salt, of which the dough is to be formed, is next placed in another powerful vessel of a spheroidal form, constructed with a simple kneading apparatus working from without and operating through a closely packed stuffing-box. Into this vessel is forced a pressure equivalent to that in the aerated water vessel, then by means of a pipe connecting the two vessels, the aerated water is drawn into the flour and the kneading apperatus is operated at the same time, the water acting simply as limpid water among the flour, forming a pasty mass of the requisite tenacity. The pressure is now withdrawn, and the gas escapes from the water, and in doing so, raises the dough in a beautiful and rapid manner, the intermixture being thorough and complete. The mixing vessel may have, say, an internal capacity of 10 bushels; to fill this with the inflated bread dough only 3½ bushels of flour are required. In the intermixture of water with flour the pasty mass measures rather less than half the bulk of the original dry flour, or about 1½ bushels instead of 3½, the expanded dough represents nearly 5 parts gaseous to one solid. The subsequent baking expands it to a much greater extent, making the proportions of gaseous to solid in all about 10 to 1. It must be selfevident that this bread is very pure, nothing but flour, water, and salt, being used, and reliable experiments have demonstrated that 118 loaves can be made from the same weight of flour which by fermentation will make only 105 or 106, the loss in the latter being caused by the emission of carbonic acid gas through the dough during the process of fermentation and manufacture. In baking this bread, it has been found necessary to have the heat admitted through the bottom of the oven, with means of regulating the heat of the top, so that the bread is cooked through the bottom, and the heat subsequently admitted above towards the last, in order to perfect the top crust. These precautions are taken owing to the low temperature of the dough when placed in the oven, caused by the use of cold water in the baking process, and the sudden expansion on rising inducing a temperature of 40° Fahr., lower than ordinary fermented dough. This in connection with its slow springing until it reaches the boiling point, renders it desirable to delay the formation of the top crust until the last moment.

Mill Insurance in Great Britain.

In the course of his report to the National Association of Irish and British Millers, Mr. Appleton, of Stockton-on-Tees, said: I take it for granted that every miller insures his mill and stock to a certain extent, but many do not consider it necessary to do so fully, which I think is a great mistake and false economy. What can be a greater calamity to a miller than the destruction of his property by fire? Even when fully covered, he has to contend with the complete disorganization of his business, which (I speak from experience) it takes years to overcome; but, if we add to this inedequate insurance, it must be patent to every one that the difficulties are immensely increased, and that it is, therefore, most unwise to under-issue. In effecting an insurance, two points require careful attention. The first is to insure with offices of recognized standing and well paid up capital, where you have ample security in case of fire, combined with premiums not in excess of the risk. The second is so to divide your insurances that each office has an equal interest in every portion of your mill and contents. I wish now to refer to the two classes of offices, the tariff and the non-tariff, and I must take exception to the way in which the former conduct their business, on the following grounds: First, they make no distinction in the classification of mills, or allowance for appliances for the extinction of fire. Thus, a mill constructed on the best principles of safety from fire, and with every arrangement for a speedy extinguishments, should one occur, is placed on the same level as one on which no thought or pains has been bestowed, and which, from age or faulty construction, would succumb on the slightest provocation. Second, excessive rates. This, I think, is proved by reference to their published balance-sheets, which show a profit of from 40 to 60 per cent., and it is well known that the heavy premium now charged would have been still further increased had it not been for the influence of the non-tariff offices. At the present time when millers have to struggle with small profits and keen competition, both at home and from abroad, they feel that some consideration ought to be shown toward them by the insurance companies, and the existing almost prohibitory rates, reduced.

Third, the extra charge for night running. This, instead of being a source of danger, is in fact a protection, as in the event of a fire breaking out the probability is that it would be speedily discovered, and means at once adopted to put it out; and everyone knows that it is prompt measures that save a building. On the other hand, when a mill is closed all night, mischief may be smouldering for hours and nothing be discovered, until such a firm hold is obtained that all efforts are useless. Statistics which no insurance company can gainsay prove that out of 79 destructive fires, 57 occurred by night, on Sundays, or when the mill was stopped, leaving only 22 in the day-time and when the mill was working. It is surely then an unreasonable thing to demand extra payment where the risk is not increased, but lessened. On the other hand, the non-tariff, offices fully recognize the principle of classification, have lower rates, and make allowances of from 15 to 25 per cent. for good protective arrangements, thus offering an inducement to millers to adopt measures of safety. There are now several of these companies of substantial position who are doing a large and increasing millers' business.

The old proverb says, "Prevention is better than cure," and as I have pointed out the importance of every miller having his property fully insured, I would now urge the equally important duty of protecting that property from danger, by making use of such arrangements as experience has proved to be effectual, both for localizing and preventing fire. Our Secretary, Mr. Chatterton, was over in Stockton a short time ago, and saw what I had done in this direction. He thought favorably of my arrangements, and suggested that, through the medium of this paper, I shonld bring them under your notice, as it might be interesting and useful to millers generally.

Before building my new mill, in 1870, I submitted the plans to two insurance offices, from whom I received many valuable suggestions, which I adopted. The mill is divided into three compartments, communicating by double iron doors, which, by a strict rule, are kept closed when not in use. One compartment for screens, separator, steam drier, &c.; another for millstones, rollers, silks, &c.; the other for grain. The walls dividing these compartments are of extra thickness, and carried several feet above the roof; the exhaust from the stones and other machines is taken out of the mill to a building having a light wall and roof, which would readily collapse with any explosion, without damaging the mill proper.

I have a 2½ inch iron pipe carried through the mill from the basement to the top story, connected with the Water Company's mains, with a good pressure of water to the highest point. On each floor is a large valve or tap, to which is attached fifty feet of hose, with nozzle, ready for immediate use, with a further fifty feet at hand if required. I have also a supplementary 1-inch iron pipe carried in like manner from basement to roof, to supply fire pails, of which there are 12 on each floor. There are also dispersed about the mill several hand pumps and "Extincteurs." I also prohibit the use of naked lights in going about the mill, each man being provided with a safty lantern. The mill is lighted in the usual manner, by gas. In the mill-yard are two standard water pipes, with a quantity of hose. I pay the superintendent of the Stockton fire brigade £10 per year, to regularly drill my men in the use of the various apparatus. This he does once a fortnight; and to show the advantage of this instruction, I may say that a short time ago a fire was discovered on some premises in a street not far from the mill. My men sallied out, and by using the means at their disposal succeeded in almost extinguishing it before the arrival of the fire brigade. Yet so rigid are the rules of the tariff offices that they ignore all these arrangements and appliances, and not the slightest allowance is made for them. At the same time it is equally our duty to use every means for our own protection. The benefit is not confined to ourselves only, but reacts upon the nation itself, as a large proportion of the savings of the country are now annually consumed by fire.

The Distribution of Money.

The paper circulation of the United States, by which is meant greenbacks and the notes of national banks, amounts in round numbers to about $690,000,000, and is thought to be greater than that of any other nation. It is more than three times that of Great Britain; nearly three times that of Germany; $170,000,000 more than that of France; nearly twice that of Austria, and about $50,000,000 more than that of Russia. With the exception of the Netherlands, we have more paper money per capita than any other country, our proportion being about $15, and that of the Netherlands $20.46. The paper circulation of Great Britain is only $6.61 per capita; of Germany, $5.38; of France, $12.65; of Austria, $9; and of Russia, $6.76. Of coin in circulation Switzerland has a larger amount in circulation than any other nation, it being $34.31 per capita; Belgium coming next with $32.60; then France with $31.41; Great Britain, $22.50, while the United States has less than $8. Russia has but $1.27, and Italy $1.38 of specie per capita. Taking specie and paper money together, France stands first, having a circulation of $44.06 per capita; next Belgium with $43.55; then the Netherlands with $42.24. The entire circulation of the United States is about $23 per capita, that of Great Britain, $29.11. Italy with a population of nearly 27,000,000 has a circulation of only $6.42, which is smaller than that of any other European nation. On this continent the United States of Columbia has but $2.24 per capita; Mexico, $4.50, and Canada, 10.92. Of course all these figures are given as but approximately correct.

The United States vs. Russia.

The London *Globe* of a late date publishes under the head of "Our Foreign Wheat Supply" a very interesting and instructive article, which goes to show that the most terrifying evil of Russian farming is American competition; that not only is America likely to prove a dangerous rival to Russia abroad, but It is possible that she may even fight her in her market at home. Odessa is the great outlet for South Russian corn, and is only a few hours' distance by steamer from Poti on the opposite coast of the Black Sea. Yet, during the last few months, in spite of a heavy protective duty, Some Yankee speculators have landed American flour at Poti, and sold it cheaper in the open market at Tifflis than either Russian flour or the article grown in Caucasus. The ease and cheapness with which American corn is sent by rail to the coast, and thence shipped to Europe, is well known, and although it is believed that, in course of time, the railway rates will rise, still, very shortly, vessels of a thousand tons will be able to traverse the Canadian lakes and take abroad grain from Chicago. In Russia, on the other hand, not only are the means of communication dear and bad at the present moment, but they cannot be extensively improved for a considerable time to come. The Southern lines consist only of one set of rails, with exceedingly inedequate rolling-stock, and are controlled by Government officials who have no public opinion, competition, or any other healthy motive to stimulate their activity. In 1879 the Czar's subjects exported only 225 million bushels to the 276 million bushels exported from this country, and as Russian crops are bad this year, it is quite probably that we shall export grain to that domain. The *Globe* concludes its article as follows:

Such a contingency cannot be regarded with indifference by Russian statesmen, and we believe that the question of American competition is seriously engaging the attention of the Minister of the Interior. In itself the problem would tax to the utmost the most talented mind, but in addition to this Mr. Makoff has to decide what shall be done to check and destroy the eruption of corn-beetles which, starting into life on the Black Sea shore five years ago, has since then spread steadily north until to-day the swarms have reached the Central Provinces, and with a simultaneous invasion of locusts from tne Caucasus, have done damage which specialists affirm will exceed this year the enormous total of £20,000,000 sterling. A genius of the order of Peter the Great might reorganize the Russian corn trade in such a manner as to enable it to hold its own for a time against America, but it would find itself baffled by the corn-beetle, against which no remedy has yet succeeded. This dreaded insect and the droughts, which have become a regular feature of South-Russia owing to the reckless destruction of forests in the North are so disastrous in their effects that a series of famines may be expected in Russia for several years to come. Should these continue sufficiently long, we may witness the curiously painful spectacle of Russia appealing to America for bread, and the merchants of Chicago shipping corn direct to the Black Sea and the Baltic.

WHAT THE FARMERS RAISE.—A writer in the *International Review* says that in the fifteen years the production of wheat and barley in the United States has trebled; corn, cotton and tobacco more than doubled; oats increased nearly 140,000,000 bushels; potatoes nearly doubled, and hay increased more than one-third. He gives the figures for the chief crops in 1865 and 1879, according to which the production of wheat has increased from 148,553,300 bushels in the former year to 448,757,000 in the latter; corn from 704,427,000 to 1,544,899; oats from 225,252,000 to 364,253,000; rye from 19,544,000 to 23,646,000; barley from 11,291,000 to 40,148,000; potatoes from 104,632,009 to 181,369,000; hay from 23,538,000 tons to 35,648,000; tobacco from 184,317,000 pounds to 384,059,000; and cotton from 2,223,060 bales to 5,020,000. The remarkable increase in the production of cereals has been largely owing to the settlement and development of the Western and Northwestern States. Within the present generation the centre of corn production has shifted from the South to the West, and of wheat production from the Middle States to the far West. In 1849 fifty per cent, and in 1859 fifty-two per cent, of the corn crop of the country was produced in the Southern States.

Herr Silvan Wohlrab, the Hungarian miller in the employ of J. B. A. Kern of Milwaukee, and Herr Wohlgenannt, Washburn's Hungarian miller are having a fine visit togather at Minneapolis. The way the beer and Hungarian is slung around is said to astonish even Hoppin.

We clip the following three items from our esteemed contemporary the *Northwestern Miller*, of Minneapolis.

The new owners of the North Star Iron Works, the sale of which was noted last week, have formed a stock company and articles of incorporation were put on file in the office of the Register of Deeds on the 5th inst. The capital stock of the new company is fixed at $100,000, issued in 2,000 shares at $50 each, and the indebtedness is limited not to exceed $50,000. The corporation begins its existence August 18th, and is to continue thirty years. The incorporators are Henry Stern, Herman Stern and Veitts L. Rice, of Milwaukee. The articles further provide for the following officers and directors, to continue in office until the second Wednesday in January, 1881, upon which date an annual election shall thereafter take place. President, Henry Stern; Secretary and Treasurer, Frank J. Stern. Board of Directors: Henry Stern, Herman Stern, Veitts L. Rice, Frank J. Stern and Louis Schlesinger.

Arrangements are being made for building another large elevator in Minneapolis, to be located in the triangular piece of ground lying south of the hay and wood markets, and between the Minneapolis & St. Louis and Minneapolis Eastern tracks and First street. The projectors of the enterprise are the association of free elevator men, doing business along the St. Paul, Minneapolis & Manitoba road, the new elevator being designed to receive the overflow of the private elevators. All the stock will be owned in the association. The elevator when completed will have a capacity of at least one million bushels. It will be built in two or three sections and part of the structure will be put up this season. With the exception of obtaining the right-of-way over a small piece of street, arrangements have already been made for track room and facilities for handling cars delivered to and taken from the elevator.

A serious accident occurred in the Washburn A mill last Monday, Mr. C. A. Van Husen, President of the Detroit Fire and Marine Insurance Co., of Detroit, Mich., in company with his wife, was visiting the mill. While watching the operation of a set of Hungarian rollers, Mr. Van Husen attempted to take some wheat from the hopper for the purpose of examining it. The motion brought his coat in contact with the cog-wheels of the machine, which instantly drew it in. In spite of prompt assistance Mr. Van Husen was drawn against the machine with such force as to dislocate his shoulder, and was only saved from worse injury by the presence of mind of one of the employes, Michael Hanley, who stopped the machine by throwing off the belt. Mr. Van Husen was made as comfortable as possible at his rooms at the Nicollet House, and will probably soon recover from his injuries. Mr. Hanley hurt his hand severely in rescuing Mr. Van Husen from his perilous position.

Capt. E. W. Pride, late of Appleton, is now opening out a stock of mill furnishing goods in Edgerton building, on Wisconsin Avenue, and will keep everything in the way of millers supplies. The Captain is a thorough energetic business man and will make this venture a success. In connection with this line of trade he will also act as agent for the extensive house of John T. Noye & Son, of Buffalo. We clip the following notice from the Appleton *Post*: "Capt. E. W. Pride, we regret to say has changed his residence from Appleton to Neenah. We can commend the Capt. to our neighbors as a good citizen, a stalwart democrat and a jolly good fellow under all circumstances. The Capt. is the representative of the great mill furnishing house of John T. Noye & Son of Buffalo, and is one of the best posted men in his line in the country. The millers like to deal with him because he is reliable and straightforward He will open a store in Neenah, fully stocked with mill furnishing goods.